EXHIBIT A

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7/28/2021

Brendan T. Sweeney, Esq.
Freiberger & Washienko, LLC
211 Congress Street, Suite 720
Boston, MA 02110

RE: Charu Desai

Dear Mr. Sweeney,

As per your request, I interviewed your client, Dr. Charu Desai, via Zoom on July 24, 2021, for approximately 5 hours. The purpose of the evaluation was to assess the emotional distress your client has suffered and is likely to suffer moving forward as a result of her termination from her employment at the UMass Memorial Medical Center after about 30 years. In addition to the interview of Dr. Desai, I reviewed the following documents:

- Amended Complaint
- The notice of termination of Dr. Desai
- Dr. Desai's answers to interrogatories
- Dr. Marc Cutler's notes and a letter he wrote in support of Dr. Desai
- Deposition transcript of Dr. Cutler
- Deposition transcript of Dr. Desai
- Letters of Support and Affidavits from:
  - Letter from Dr. Charu Desai's daughter, Diana Desai, MD, MBA, dated 7/23/2021 and Affidavit, dated 7/26/2021
  - Letter from Dr. Charu Desai's husband, Shirish Desai, MD, dated 7/23/2021 and Affidavit, dated 7/26/21
- Letters of Recommendation, including from (and attached to this report):
  - Jerry P. Balikian, MD, FACR, Professor of Thoracic Radiology, Interim Director of Thoracic Radiology, UMass Memorial Health Care, two letters, dated 5/14/2001 and 9/20/2015
  - Daniel Berman, MD, Department of Radiology, UMass Medical Center
  - William J. Blake, MD, radiologist, Holden District Hospital, dated 5/17/2001
  - Andrew Chen, MD, Assistant Professor of Neuroradiology, UMass, dated 4/3/2018
  - Robert D. Chiulli, MD, Chief of Radiology, Worcester City Hospital, dated 10/15/1991
  - A. Alan Conlan, MD, Professor and Chairman, Professor of Thoracic Surgery, UMass, dated 5/14/2001

- Carl D'Orsi, MD, FACR, Professor and Vice Chairman, Directory, Diagnostic Radiology, UMass, dated 1/7/2002
- George H. Eypper, MD, General Internal Medicine/Adult Primary Care, UMass, dated 4/24/2018
- Karl Fabian L. Uy, MD, FCCP, FACS, Associate Professor and Chief, Division of Thoracic Surgery, UMass Memorial Health Care, UMass Medical School, dated 3/11/2020
- Joseph T. Ferrucci, MD, Professor of Radiology Emeritus, UMass Medical School, dated 3/22/2018
- Gopal R. Vijayaraghavan, MD, Associate Professor of Radiology, Director, Breast Imaging, dated 4/5/2018
- Aaron Harman, MD, Assistant Professor, Department of Radiology, UMass Memorial Medical Center, UMass Medical School, dated 3/25/2018
- Richard S. Irwin, M.D., Professor of Medicine, Director. Division of Pulmonary, Allergy and Critical Care Medicine, UMass Medical School, 2 letters, dated 12/24/2001 and 3/29/2018
- Sanjay Kamath, M.D., Department of Radiology, UMass Memorial, dated 5/25/2001
- David Kydd, MD, Chief Resident, Department of Radiology, FRCPC Neuropathology, dated 5/11/2001
- Jeffrey Leppo, MD, Interim Chair, Department of Radiology, Division of Nuclear Medicine, Department of Medicine, Division of Cardiology, UMass Medical School, dated 11/30/2001
- Lacey McIntosh, DO, MPH, Assistant Professor, Director of Oncologic Imaging, Body, Chest, and PET/CT Divisions, Department of Radiology UMass Medical Group, dated 5/15/2018
- Paul A. Ricciardi, MD, Associate Professor of Medicine, Division of Hematology/Oncology, UMass Memorial Medical Center, dated 4/30/2001
- Ricardo Rosales, MD, Diagnostic Radiologist, Framingham, Ma, dated 10/5/1991
- David A. Rosenfield, MD, Wachusett Family Practice, Holden, Ma, dated 5/8/2001
- Edward Smith, MD, Professor and Chairman, Department of Radiology, UMass Memorial, UMass Medical School, dated 7/15/2001
- Cynthia Umali-Torres, MD, Residency Program Director, UMass Memorial Medical Center, dated 1/16/2002
- Francis A. White, MD, Radiology Clinic Inc. Worcester, Ma, dated 10/30/1991
- Simon E. Writter, MD, Southbridge Ob-Gyn associates, dated 11/13/1991
- Joseph Makris, MD, Physician, University of Massachusetts, dated 7/27/21

Statement of Non-Confidentiality

Immediately prior to the interview of Dr. Charu Desai, I informed her as to the nature and purpose of the present evaluation. It was explained to Dr. Desai that the current interview was not conducted in the context of a doctor-patient relationship, but as an independent medical evaluation at the request of her attorney, Brendan Sweeney, Esq., and that testimony may be required. Dr. Desai understood that the evaluation was not confidential. She understood that a report would be prepared and submitted to the requesting party, and that the interview was not conducted in the context of a doctor-patient relationship. Dr. Charu Desai voiced her understanding and agreed to proceed.

REVIEW OF COLLATERAL INFORMATION

Precipitating factors leading to the current evaluation:

According to Amended Complaint, "For over twenty-six years, Dr. Charu Desai worked at and for the UMass Memorial Medical Center, Inc., the UMass Memorial Medical Group, the University of Massachusetts Medical School, and UMass Memorial Marlborough Hospital. She was an extremely highly-regarded radiologist, respected by students, trainees, department colleagues and physicians across those institutions. Beginning in approximately 2016, however, she was subjected to disparate treatment compared to her white, male, younger, U.S.-born and non-disabled colleagues who performed the same or substantially similar work. Then, in 2018, she was falsely accused of performance deficiencies, terminated, and will be replaced by a white, younger, U.S.-born and non-disabled radiologist with less experience…

As a result of this treatment, Dr. Desai brings this action for damages against the UMass Memorial Medical Center, Inc., the UMass Memorial Medical Group, the University of Massachusetts Medical School, UMass Memorial Marlborough Hospital, Dr. Max Rosen, Dr. Darren Brennan, Dr. Stephen Tosi, and Dr. Karin Dill for unlawful employment discrimination against her on the basis of age, race, national origin, gender/sex and/or disability, and/or for aiding and abetting discrimination, all in violation of Title VII of the Civil Rights Act of 1964, 42 U.S.C. § 2000e-1(k); the Americans with Disabilities Act, 42 U.S.C. § 12132, the Age Discrimination in Employment Act, 29 U.S.C. § 216(b), the Massachusetts Fair Employment Practices Law, M.G.L. c. 151B, § 4 and/or the Massachusetts Equal Pay Act, M.G.L. c. 149, § 105A. She also brings claims against them for breach of her employment contract and defamation. Finally, she brings claims against Drs. Rosen, Brennan, Tosi, and Dill for tortious interference with advantageous relations and defamation."

Review of Dr. Cutler's depositions and notes

Dr. Cutler during his deposition summarized his treatment provided to Dr. Desai, "Individual psychotherapy and pharmacotherapy to help her mourn the loss of her career and restore her dignity that she had worked as a radiologist for many years and that you can't take away the successes that she had had, her training, and what she had maintained, her raising three children, the success of her children, her… her maintaining a marriage since 1970**…**" "**…** I basically do a lot of cognitive behavioral therapy where I get to her look at things in a different way."

Dr. Cutler described, "You know, initially, she's just worthless. She -- she was just -- you know, has no dignity, no accomplishments, and you know, that's not the reality as she presented her history. She had to overcome a lot of things in -- in her life at the time. Given her age, at least in the United States, there's a lot of discrimination against females, and during the training, there's discrimination against females. She's also from India. There's discrimination against, you know, people from -- foreign medical graduates. She went to a foreign Indian medical school, and she overcame all of those things and passed her boards and was able to function as a radiologist for many years…

She is preoccupied with the case, all sorts of depositions. She continues to focus on that a grave injustice was done to her by some new department chairman of the Department of Radiology. She continues to have some difficulty with concentrating, although the duloxetine has – you know, has helped maintain her. She continues to -- to have some difficulties with her general overall functioning."

Dr. Cutler diagnosed Dr. Desai with Major Depressive Disorder. He discussed some of the symptoms, "The decreased concentration, a subjective sense of depression, lack of energy, chronic tearfulness. She has no libido… She's not suicidal."

Dr. Cutler used Cymbalta 60 mg for treatment of Dr. Desai's depression.

Dr. Cutler discussed some of the precipitating stressors of Dr. Desai's condition, "a number of episodes that she was criticized, not accommodated…"

Dr. Cutler noted that Dr. Desai "doesn't have a biological strong component toward depression, as evidenced by past history, recurrent depressions, or a family history."

Dr. Cutler testified, "She -- she was called in and wasn't asked, gee, what are your plans in the future, you know, are you thinking of retirement because you're whatever age she is. She was just, you know, told that she was summarily dismissed."

Dr. Cutler testified, "The fact that I did not believe she had a biological etiology of her depression, which is why I put that she had no past history of a psychiatric disorder and no family history of a psychiatric disorder." He confirmed that Dr. Desai "specifically attributed her current difficulties or symptoms that she was experiencing with a series of events in the workplace." Dr. Desai characterized to Dr. Cutler, that she was "denigrated, demeaned, that here she had been trained at UMass. and that she was summarily dismissed…" He clarified, "Like I say, as a treating psychiatrist, I don't want to spend 45 minutes every week going over how horrible things are so she stays stuck. I'm trying to treat her, and that's why a treating psychiatrist is different than someone just going in for an expert opinion."

Dr. Cutler was asked to read his notes. He started seeing Dr. Desai on 5/28/20. He read his note, "Question anxiety, tearful and anxious, appetite down, no weight loss, decreased concentration, inergia, decreased libido, no suicidal ideation, no alcohol. 3/19 is when it started. Past history, none. Past medical history, primary care physician, George Eypper, MD. No allergies to any medication. Hypothyroidism. Takes Synthroid 75 micrograms a day since 2004. No headaches. No dizziness. No problems with her GI tract. Family history, father died in 2007 at the age of 79. No family history of any psychiatric problems. Good relationship. Mother died in 2017 at the age of 82. She was a teacher. No psychiatric, no substance abuse disorders. Brother died in 2005. He had mild cerebral palsy, he died at the age of 63. He had no medical problems. Brother, 58, lives in New York, has no psychiatric or substance abuse disorder. Has a best friend. Left Mumbai in 1974. Practice Hinduism. Social history, radiologist 1982, training 1/92 to 3/19, was in UMass. Mumbai. Graduated from a medical school there in 1973. "Husband is 75, was an internist, retired in March of 2019. They married in 1970. Daughter, Aseshis (phonetic) is age 42, single, no psychiatric or substance abuse disorder. Son, Kristaki (phonetic) is age 37, has an MBA, and has— is married with one child. Her daughter, Dianna, is age 35, is a medical doctor, a clinical pathologist…

Mental status exam, oriented to time, person, and place. Memory grossly intact. Affect and mood depressed. No looseness of associations. No hallucinations. No suicidal ideation. Diagnosis, major depressive disorder… and she told me at that time that she had an attorney. We started her on Cymbalta, duloxetine, 60 milligrams. The telephone number to call in the pharmacy. On 6/7, talked to -- again, patient talked to via telephone according to the coronavirus pandemic. Still having decreased sleep. Has started the Cymbalta. No special side effects, and she talked about work, last working on 3/17/2019."

Note of June 10th, 2020, "I, again, talked to -- my office to her home according to coronavirus pandemic protocol. Addressing issues of -- of what COVID-19, you know, means to her, and at that time, she was sleeping somewhat better."

Note of June 17th, 2020,"Patient, again, talked to via telephone from my office to her home according to the coronavirus pandemic protocol, and addressing issues, some of her life, trying to find out about what depression means to her and what -- anybody in the family having depression.

Note of June 24, 2020, “again, talking to -- and I'm trying to find out about whether there's any self-medication that she's ever had, any – any addictions or -- or those kinds of things.”

“…7/14, again, talked to that, and we're -- we're talking about her ability to -- to self-care, whether there's any problems with her self-care, which she said there was not… 7/21, again, we're talking about her fear of getting coronavirus, what she's doing to be safe, something that I addressed with almost every patient that I have. And then 7/29, again, family members back in India that were getting coronavirus, and then at 8/19, we were talking about her need for help, the family support, the daughter, especially the younger daughter that's a clinical pathologist that – that encouraged her to -- to see someone in -- in her area via telephone and -- and what -- what that meant… Well, she was staying safe, and in India -- I may have mentioned it more in some other sessions, at least I remember we had some -- there were several deaths in her family in -- back in India. There were -- there were a number of people, brother-in-laws, and you know, there were always people that were getting sick with it in the summer and into the fall, and -- and she was, you know, basically staying safe, not going out. She used to be involved with her Hindu temple, but she wasn't doing anything and basically was not going out.” Regarding grieving, “…no more than anyone would be that had lost some relatives that she didn't see regularly because they're back in India, but I think, you know, she was appropriately mourning some of their deaths.”

Dr. Cutler continued to read his subsequent notes, “So, in this session, we're -- basically, we're talking about addressing issues of the memories of -- of her unfavorable treatment at UMass., that she perceived that she -- she was treated as far as coverage differently, wasn't allowed to hire someone. She talked about that --that she -- she was accused of incompetency.”

Note of 9/15/20, "Patient talked to via telephone from my office to her home according to the coronavirus pandemic protocol addressing issue of memory of unfavorable period at UMass…

9/29, again, talked that there -- there was some -- she was going to have to -- she was anxious about a -- a deposition that was coming out where she had to go into Boston. Her -- her daughter who lives in Staten Island was giving her a lot of support. She was having a lot of -- a lot of difficulty, and I was encouraging her because I don't know whether she was taking her medication or not, that to make use of the duoxetine, and we talked about how important that was…

October 6th, telephone from my office to her home and addressing her preoccupation with the case. And when I say, ‘the case,’ it's everything from -- you know, that's going on with any legalities or whatever interaction with her attorney, you know, with her going to meet to do -- you know, do anything via that and if it's an ongoing case and those things.”

Dr. Cutler described Dr. Desai's preoccupation with her case, "Well, it was all-consuming. That -- that's basically what her -- her life is. You know, if told she was retired, she wasn't enjoying her retirement. She -- she now had a full-time job thinking about the case."

Dr. Cutler continued, "So these were some sessions where specifically it was addressed her sister-in-law had died in India from COVID-19 and helping her, you know, get through that and, you know, what – what had been going on with that. That was 8/4 and 8/11…

And then, on 10/29, it's this deposition that she, again, is preoccupied with, as she should. She's nervous about being asked questions and, you know, how she -- whether she's going to have a anxiety attack or, you know, those kinds of things, and I gave her, you know, support and, also, you know, pointing out to her that that's part of the case…

Patient talked to by telephone my office to her -- her home according to coronavirus, addressed the issue of the deposition…

Again, that's a cue for me to remember all – all the things that were going on with the deposition, her concern, her -- you know, her anger about needing to have to be deposed or her anxiety about what questions, you know, might be asked…

We did not meet that next week. We didn't meet again until 11/12…

It wasn't canceled. We were meeting every other week, and I -- I think I had thought that, maybe, we should meet, and then it never – it never happened. I told her she could call me. I think she had -- had already had the deposition and, if she needed to call me for -- you know, to process things, that she could."

On 11/12/2020, "Patient talked to via telephone from my office to home according to coronavirus pandemic… and again, about the deposition and -- and her feelings towards the deposition and how -- how she had gone and how difficult it was for her. Her husband had -- had driven her. She was concerned -- she told me that -- that she had some irregular heart rhythms or something like that…"

Dr. Cutler continued to read his notes, "So one -- again, her -- again, going over the history of how she felt that she was mistreated at UMass., giving me the history that it -- she had thought, I mean, when is she going to retire. I mean, she -- she's of the age, and -- and she wished that whoever she spoke to -- I guess, the chairman -- you know, had -- had asked her what her retirement plans are, and she might have said that she wouldn't mind, you know, either working part-time or gradually transitioning into retirement, but that wasn't the -- the way the question got. That's what that session was taking about."

When asked, "Do you recall when -- when Dr. Desai expressed to you she -- she planned on retiring?" Dr. Cutler replied, "She didn't have an exact date, but she had, certainly, some -- some thoughts that she's getting older and her husband had retired. We talked about what it meant that -- that he had retired already and what that meant about her continuing working…"

On 12/15, "Let's see. I'm talking more about the medication and, you know, whether it's helping her or not, whether she has any, you know, side effects from it, which she didn't, ongoing case against UMass., issue of no waiting, any results from, I guess, her deposition, how she had done or whether the -- how

the case was proceeding. I think she, maybe, was awaiting some sort of communication from her attorney…

And then she's still, you know, very much talking about the case, and then she, also, had a visit from her daughter from Staten Island."

Dr. Cutler did not meet with Dr. Desai from December 29, 2020 to March 2, 2021.

"March 16th, again, the issue of her case against UMass. and then, also, that she's going to be getting vaccinated for, you know, COVID-19 and, again, something that I do with a number of patients at that point in time, you know, restrictions in her life regarding COVID-19 was additive. Whatever other psychiatric problems any of my patients have had, that COVID-19 is in the background, too, and what that means…

3/30, again, talking about the issue of the continued case and that she feels like she's in a battle, to use that word, and I'm -- and I'm trying to get her to -- you know, to look at the quantum of her responsibility, that she has a choice of having the case or not having the case…

It's ongoing that -- that she feels like she's in a battle. I mean, my understanding is that she's -- she's in a fight…

4/13, again, we talked about medication. She -- she needed some more medication; so I would be calling in the telephone number at the pharmacy, and -- and, again, the number of relatives that have died from COVID-19."

In another note, dated 3/30, "I remembered some more things about her legal case against UMass. and -- and her portrayal, and I have down there, (as read) "Their passive-aggressiveness in non-responding to a deposition," and she shared with me that, I guess, her lawyer either subpoenaed the -- the chairman and -- and she, you know, said that he at least at that point had not responded to it. So I -- I wanted to remember that specific fact, and that's -- so that's, probably, why that's there twice."

On 4/20, "… Again, more talking about the case and her feeling about the passive-aggressive stance of UMass. in her case, that, you know, she did not feel like they were playing fairly."

Dr. Cutler testified, "She had had some sort of medical episode that she thinks could have called into question whether she, you know, could do all that she needed to do, including coverage and things like that, and again, she portrayed to me that, if she wasn't allowed to pay for someone, which she was willing to do, to cover for her, that wouldn't have been an issue." Dr. Cutler didn't know what the issue was, "No. No, I don't. I mean, it could have been a panic attack because many people go to the emergency rooms with chest pain and with cardiac things and, after the full work-up, they find nothing, but it was some sort of cardiovascular something, and -- but I -- you know, I did not pursue it, and my thinking was, well, this very well could have been a -- a panic attack."

Dr. Cutler testified, "She and I have had as part of her therapy my supporting her and my experience since we're in somewhere the similar age range, femaleness, non-foreign, in other words, non-American, non-native speaking English, it's something to overcome, and again, in trying to be supportive of her, I have many times said, Well, look at all you've overcome, and you know, again, don't look at this

as a defeat, if you would, quote, lose the battle; so, in that sense, yes, I mean, you know, the fact that she was a foreigner."

Dr. Cutler was asked, "Assuming the case would not disappear, what do you believe her future treatment would be, at least for the duration that it continues; similar courses she's on now, you know, periodic sessions with you and continuation of the medication? Is that what you expect in the near future?" He replied, "I expect that, if there was any increase in symptoms, we actually would think of medication augmentation, medication change, a more frequent -- even though I don't have -- you know, again, I – I do a lot of group psychotherapy by Zoom. You know, I think of putting -- you know, augmenting that kind of psychotherapy. You know, that's what I would expect." (if her condition and symptoms worsened in the future.)

Dr. Cutler was asked, "… you wrote and Mr. Wakefield asked you some questions about the – the paragraph that says, 'Consequently, I can state that her current psychiatric disorder and need for treatment is caused by a series of events in the workplace.' Do you see that?" Dr. Cutler replied, "Yes."

Dr. Cutler was asked, "Did she at any point -- well, did she prior to August 18, 2020, mention that there were non-COVID stressors in her life?" He replied, "Not that I recollect."

Letters from Dr. Charu Desai's husband and daughter

<u>Letter from Dr. Charu Desai's husband, Shirish Desai, MD</u>

"I have been married to my wife, Charu Shirish Desai, for over 50 years. She has experienced significant deterioration of her mental health since Dr. Rosen fired her at UMASS Medical Center. Prior to this traumatic event, I would describe Charu as a person that was full of life. She felt deeply fulfilled at work and enjoyed her personal time with family and friends. She regularly participated in recreational activities. Now, she has difficulty doing basic things that she was able to do before. She no longer drives, so I drive her everywhere if she needs to do something essential. But she prefers to spend most of her time at home. I would describe her general personality right now as lethargic, lacking enthusiasm and energy. She often forgets things. She cries a lot. She cannot seem to get over what happened to her at UMASS and has told me that life is not worth living if this is what she has to experience. Lately, she appears more overwhelmed by and preoccupied with the lawsuit than ever before. She keeps saying that the whole situation with UMASS was 'premeditated murder.' I can only hope that she will recover in the near future. I am worried that with her current state right now that she may never recover from this trauma. I pray this is not true.

Since this all happened to my wife, I quit working. I felt that I needed to support Charu full time due to the extent of the grief that she was experiencing as a result of UMASS' actions.

To cheer us up with everything going on, my daughter held a surprise 'retirement party' for my wife and me, even though she knew that Charu was terminated and that I had to stop working in order to help my wife. She thought that if she could find a way to show Charu how many people adored and respected her, then my wife could get over the pain associated with her firing. She also thought it would cheer me up too because I did not want to stop working. I actually retired in 2002 but have been doing contract work since then at the same hospital. Charu and I had no plans to stop had this situation with UMASS not come about. Unfortunately, these 'cheer up' mechanisms did not help my wife.

Last year, I forced her to see a psychiatrist because I felt that the situation became too difficult to handle without seeking professional help. I even set up the appointment for her. She sees a psychiatrist regularly. But I personally don't think that these sessions are making her better, especially with what I have seen lately."

Letter from Dr. Charu Desai's daughter, Diana Desai, MD

"I write this letter, with a heavy heart, on behalf of my mother, Charu Desai, MD. In addition to being a wonderful mother, she had an amazing professional career as a radiologist at UMASS Medical Center. She was well respected by previous chairs and colleagues, including, but not limited to, Drs. Smith, Ferrucci, Balikian, and the late Dr. Umali to name a few.
She dedicated her entire life to UMASS, and was wrongfully terminated by Dr. Rosen, the Chair of Radiology at UMASS. Prior to her unlawful termination, she was an extremely pleasant, happy, and optimistic person. She was full of life and was always smiling. She thoroughly enjoyed her work, excelled at her craft, and was thankful to be able to save countless lives and help patients in need. Following Dr. Rosen's despicable treatment of my mother, she has not been the same person and has since been diagnosed with severe depression. I have tried to be there for her every step of the way. I personally set her up with a therapist, who she had a few sessions with. With COVID restrictions in place, I found it harder to be there for her. My dad has stopped working since my mom left employment so that he could completely dedicate himself to being there for my mom full time, however he noticed that her symptoms were getting significantly worse than he could handle. As a physician himself, he felt that it was in his wife's best interest to seek professional psychiatric help. I felt similarly. Therefore, my father reached out to Dr. Cutler, a local psychiatrist, in order to set up an appointment on her behalf. She has been in therapy ever since. My mom initially wanted avoid seeing a psychiatrist at all costs because of the stigma and humiliation associated with mental illness. She thought she would be able to get through the trauma associated with her termination by having familial support. Although my dad and I initially thought that we would be able to support my mom emotionally in order to help her overcome the devastation associated with her termination, we noticed a continued decline in her mental health. We no longer felt it appropriate to manage the situation on our own, especially with COVID limiting direct personal interactions. We felt that there was no choice except to force her to get professional psychiatric help, as it was in her best interest. Of note, my mother never had any psychiatric issues in the past. At present, she continues to experience intense distress and anxiety, and is consumed by the litigation with UMASS. She cannot think about anything else. More recently, I have noticed days where she sobs inconsolably and has difficulty getting out of bed. She used to be able to do an active job search, but given her recent emotional state, those efforts have been temporarily halted."

Letters of recommendation (attached to this report)

Multiple letters of recommendation from Dr. Charu Desai's colleagues and supervisors attest to her extraordinary ethical, professional, and humane qualities. These are too voluminous to integrate into this report (please see attached).

SUMMARY OF INTERVIEW WITH DR. CHARU DESAI

Dr. Charu Desai is a 70-year-old woman, born to an intact family unit in Mumbai, India. Dr. Desai's father, Dinkerai Naik, passed away at the age of 79 in 2005 of a suspected abdominal tumor. Mr. Naik

was educated as a lawyer but was employed by an insurance company in a managerial position. He did not have any history of mental illness or substance abuse. Dr. Desai described her father as "very caring, loving… used to say a lot of jokes… and people loved him." Dr. Desai was close with her father and traveled to India to attend funeral services.

Dr. Desai's mother, Pushpa Naik, passed away at the age of 83 about 3 years ago, on December 29, 2017, of "old age." Ms. Naik did not have any history of mental illness or substance abuse. She was employed at a younger age as a teacher. Dr. Desai described her mother as "very, very loving… helping a lot of people… she had a lot of impact on her students." Dr. Desai visited her mother in India when her mother was very ill, and about one month prior to her death. Dr. Desai commented, "I missed them. They were great parents." Funerals were held according to traditional Hindi practices.

Dr. Desai has two younger brothers. Her youngest brother is 13 years younger than her, lives in New Jersey and works in a financial field. Her other brother lived in India for all of his life and passed away in India on June 26, 2013 at the age 62, "he had a fever, cough, congestion for 2 days… and he had a mild cerebral palsy, studied until 9th grade" and was supported by Dr. Desai's parents.

Regarding her childhood, Dr. Desai described that the family had to frequently move around India, "We lived in different places because my father was transferred frequently, and he was getting promotions." Eventually, when Dr. Desai was in 8th grade they settled in Surat, Gujarat, where Dr. Desai graduated high school, attended college, and then graduated from medical school. When living in Surat, "my parents used to take us to gardens in Mumbai." Dr. Desai explained that there are a variety of parks and points of interest in Mumbai. She recalled, as a child going to movies with her parents, "at the time there was no TV… and in movies it was documentaries." As a child she had no difficulty making friends and loved to play with neighborhood children, "jump rope… hide and seek…" She also lived with her grandparents "for a couple of years." They lived in a rural area by a pond and she enjoyed being in country setting and partaking in related activities.

Dr. Desai denied any history of childhood abuse. She stated that she was a loved child and well cared for by her parents, grandparents and extended family.

Dr. Desai explained that prior to 8th grade she attended multiple schools, at least 4 schools. She always had good grades. After settling in Surat, she completed 12th grade and graduated from high school. Subsequently, she studied science in college. She had excellent grades, which allowed her to apply for medical school. She then attended Government Medical College in Gujarat, and graduated in 5 and a half years. She excelled academically.

Regarding her history of relationships, Dr. Desai never dated. "It was an arranged marriage" when she was about 20 years old, in the second year of medical school, to a young doctor who was practicing in the area. Now, they have been happily married for 50 years. Her husband, Dr. Shirish Desai, is a 77 year old retired internist.

Dr. Desai's marriage produced 3 children, 2 sons and 1 daughter. All of her children are doing well. Her oldest son, Ashish, is 42 year old, is an MBA, works in financial field and lives in Atlanta. The second oldest, Kaushal is 38 year old, also with an MBA degree who works in financial field. Kaushal is married with one child and lives in Boston. Her youngest child, Diane, is 35 years old. She is a pathologist who lives and works in New York. She is married with one child.

Regarding her move to the United States, Dr. Desai explained that her husband came to the US in 1972. She remained in India to complete her studies in medical school and moved to the US in 1974. Her husband's cousin from New Jersey sponsored them. After moving to the US, her husband soon moved to Boston for a job while studying for exams. Then, he began his residency in Worcester City Hospital.

Dr. Desai lived exclusively in Massachusetts since 1974. She passed her tests, started residency in pathology at Mt. Auburn Hospital, but decided to change to radiology, "I didn't like the autopsy part." While a resident at Mt. Auburn, UMass started a residency program in radiology. She transferred to UMass, where she completed her residency and did a fellowship in CT scan and ultrasound. Their family settled in Worcester, MA. They have been living in the same house in Worcester since 1987.

Dr. Desai's husband worked for Cushing Hospital in Framingham until the hospital closed about 30 years ago. He continued to work for Tewksbury Hospital until his retirement in 2002, and since then does locum tenens work.

For about 11 years after competing her residency and fellowship, Dr. Desai joined a group of radiologists at Worcester City Hospital. Dr. Desai explained that at the time Worcester City Hospital had a large volume of patients and they provided coverage for 5 hospitals in the area.

Dr. Desai returned to UMass after her colleague recommended her to do so. She visited the radiology department, met with her peers and with the department chair, Dr. Smith. She was offered a position, which she accepted after about 3 months. Dr. Desai explained that by that time UMass has grown and had a large number of patients.

Dr. Desai started working at UMass on January 6, 1992, until she was terminated from her work on March 17, 2019. Dr. Desai described that about a year before her termination date, on March 14, 2018, she was called for a meeting with the department chair, Dr. Rosen. "I said what is it about? In the room it was him and a higher up, and myself. I walked into room and he just gave me a letter." It was a notice of termination as of March 17, 2019. The letter was dated March 9, 2018. "My first reaction was why? He said, 'No cause" and then he says, 'Your work is of poor quality.' I said, 'Show me the proof.' They said as of this day you are not reading CT scans." Since then, for one year she was reading X-Rays only. "It was like being stabbed in my heart." Dr. Desai explained, "I lived to work. It was the purpose of my life… and somebody stopped it, and without warning." Dr. Desai explained that "the proof" of poor work quality that was presented to her at a later time was made up and inconsistent with reality.

Dr. Desai continued to work until March 17, 2019. She did file grievances but her concerns weren't resolved. She described that the impact of her circumstances was "very devastating." She continues to struggle with the degrading experience of being terminated with no cause, "At night I cannot sleep. I just keep on thinking… why?" She complained that there was no concern for her and what took place was an act of cruelty, "It was a premeditated murder. That's the way I can describe it."

She related that she had warm feelings towards UMass and was highly committed to her work, "Initially, when I started, it was like my home. I had good reviews. Multiple letters of appreciation. They had a lot of confidence in me. I always went extra mile to do it with heart. Other radiologists came to me for opinion… and they said, 'If you go to court, we will come testify for you.' These people (colleagues) had faith in me."

When asked if there was any factual base for her termination, Dr. Desai stated that she had a one complaint from a pulmonologist from Marlboro Hospital, "she would complain about a lot of people" and others had expressed their annoyance with her unfounded complaints.

Psychiatric History

Dr. Desai denied any psychiatric history prior to the events related to termination from her job. She has since been feeling increasingly depressed. She saw Dr. Cutler on 5/28/19. Her husband was concerned about her emotional state and "found Dr. Cutler online… I was reluctant to a psychiatrist… people would think I am crazy." Dr. Desai described her symptoms, "I couldn't sleep, didn't want to do anything… there was nothing to live for… couldn't concentrate, crying and couldn't stop… and even now, I start crying… and with COVID, it didn't help not to have visitors and feeling more isolated."

Dr. Desai expressed that treatment with Dr. Cutler was helpful. She is prescribed Cymbalta and finds it helpful as well. However, "everything now is going on fast track, it's not helping, like constant reminder. Hopefully, it'll be better." Dr. Desai expressed that her sleep remains problematic, sometimes she cannot sleep, and "sometimes a little better… but when I wake up, I can't go back to sleep." She averages 5 hours per night. She has dreams, "sometimes I dream about working there… people, that I can't see. I wake up, think about what happened and can't go to sleep."

Dr. Desai spoke about difficulty coping with her feelings. She has positive feelings about UMass based on years of employment and feeling appreciated and on the other hand, "things changing… I had good feelings, I wanted to retire from that place, I was proud about what I was doing, teaching. I got teacher of the year award…" This type of treatment then being followed by cruel treatment, degradation and termination from work was difficult for her. She spoke about her commitment and pain of rejection from the place she was committed to. "It didn't affect only me. It affected my family, my kids… I'd never do something like that…"

"I cannot drive by UMass, it's a reminder… but sometimes I have to…" since she has to have annual checks of her pacemaker, which was originally placed in about 2000 for sick sinus syndrome. "I don't go to my department to see my colleagues."

Regarding her appetite, she stated, "I eat but I don't feel like eating."

Regarding notation in her record about decreased libido, Dr. Desai explained that her interest in pleasurable activities in general, as well intimacy and sexual activity, has markedly diminished and has not improved.

Regarding effect of Cymbalta, Dr. Desai stated that she is prescribed Cymbalta 60 mg daily. "I think negativity is better and my not wanting to do anything is better… but right now it's worse because too many things…" She returned to discussion of her termination from work. Regarding her plans to retire, Dr. Desai explained that she never thought about retirement, "because work was my life… I lived for work… teaching… residents…" Although she realizes that nothing is forever and at some point, she could face circumstances necessitating changes in her life, however, she could not see herself as deprived from her purpose without any acute need for it. "I go day by day… like I didn't know that I was going to go through this with UMass. The day it happened I thought I was going to have a heart attack… when I came out of the office, I couldn't even stand…"

Dr. Desai stated that she was treated harshly during her last year at work. Her department chair wouldn't greet her. On her last day at work, "one of attendings, he was my medical student, he rotated through radiology… and he got a cake for me and invited me… chairman said nothing, nowhere to be found… but there were a lot of residents, it was at lunch time, there were technicians, secretaries…"

Dr. Desai returned to discussion of therapy with Dr. Cutler. She addresses her feelings regarding the manner of her removal from work, "He does cognitive therapy. He tries to bring out my strengths… but I think I am never going to get out over it… I hope I do."

Regarding her coping mechanisms, Dr. Desai explained that she practices her religion, Hindi. She attends her temple and "one room in my house is a temple… my parents are religious and so I am… you have to help people. That's how I was brought up. I don't understand how people can hurt others." Dr. Desai discussed her religious and cultural beliefs. She speaks Gujarati. She described that she adopted her values from her family. As noted above, her mother was a teacher and father a lawyer. He paternal grandfather translated a well-known spiritual book to English. Regarding her loss of some family members in India due to COVID-19, Dr. Desai expressed her view, "Life is cycle… everybody who is born has to go when it's your time…" Her religious beliefs help her to deal with life and death related issues and with the grieving process. Although losses of loved ones are devastating, her views on life and death minimized the psychological impact on her throughout her life.

I asked Dr. Desai to describe her average day. She replied, "Now I don't have to work. I get up a little late, tea with husband, then bath, laundry, cooking and all that… I do prayers in the morning… and during the day. Sometimes we go to grocery, sometimes to Indian grocery." She may watch some news. Prior to COVID-19, sometimes "we would meet with friends… stopped during COVID… we are starting again." Her main hobby is reading.

Pertinent Medical History

Dr. Desai identified that she has a condition which "nobody was able to figure it out." She described an incident where "when walking from hospital to garage… and I have a pacemaker… I get a spell; I lose my strength. I just wait, usually for 2 or 3 minutes, most for 5 or 10 minutes." During these episodes her thinking is clear and she remains fully oriented and aware of her environment. "If you talk to me, I'll nod my head, I'm fine." She had seen specialists and had multiple studies, "but nobody figured it out…" She started experiencing these episodes about 20 years ago and it does not interfere with the quality of her work. The episodes are not frequent and usually take place when she feels tired. She knows in advance that she is going to have an episode. Since onset of depression, her husband usually drives the car. Since her termination from work, she rarely drives her car. When driving in the past, which is usually just to the grocery or to work, she would take routes that she is well familiar with and knows where she could pull over. She does not drive on highways. "I drive the same road… and I know when it's coming, and I know the road and where to pull over." At most she may have 2 episodes per week, usually one episode per month, and then no episodes for months. Dr. Desai complained that, in addition to her weekday schedule, she had to periodically cover weekends and this would amount to 12 straight days at work. She explained that her chairman accommodated others, including providing workstations and the option to do weekend coverage from home. "I asked for workstation at home for weekends, but this was declined but he gave it to everybody else."

As noted above, she had a pacemaker placed in about 2000 at UMass for sick sinus syndrome. She has annual in-person follow ups.

Prior to placement of pacemaker, she was diagnosed with hypothyroidism, “I never knew.” However, then she developed symptoms, which progressively got worse and necessitated her visit to a doctor for testing for a thyroid condition.

She had a mild hypertension and was prescribed lisinopril, however, her condition has stabilized and she is no longer taking medication.

On review of organ system functions, Dr. Desai did not identify any additional complaints or concerns regarding her cardiovascular, respiratory, gastrointestinal, genitourinary, neurologic or musculoskeletal organ system functions. She denied any history of head trauma. She has never experienced seizures.

Current Medications:

- Synthroid 75 mcg daily
- Vitamin D 2000 units daily
- MVI one tablet daily

Substance Abuse History

Dr. Desai denied ever using alcohol or any illicit substance.

Mental Status Examination

Dr. Desai presented neatly and semi-formally dressed. She identified her weight at 127 lbs. She is 5’5” tall. Her speech was clear with normal tone, volume and rate.

She established good eye contact. Regarding her mood, she stated, “Down.” Her affect was constricted. On several occasions during the interview, she started crying. Several short breaks were taken.

Dr. Desai was logical, coherent, and goal-directed. There was no evidence of looseness of association or flight of ideas. She denied ever experiencing auditory or visual hallucinations. She did not verbalize any overt delusions. She denied ever experiencing suicidal ideation. However, she did express during the interview that in the aftermath of her termination from work she felt like she has nothing to live for. When asked if she did not care about her life, she broke down into tears but stated that she has never intended suicide and did not have a suicidal ideation, however, her integrity and dignity were damaged and she did not see a purpose in life. She denied experiencing homicidal ideation.

Dr. Desai was alert and fully oriented to time, place, person and current circumstances. She was able to repeat 3 words, which I asked her to remember and was able to recall the same 3 words after 3 minutes.

When asked to name the Presidents of the United States starting with the current president and in reverse chronological order, she named Presidents Biden, Trump, Obama, and the “the ones from Texas… his brother was running but he lost to Trump…”

She was able to spell “world” forward and backwards effortlessly and without mistakes. She was able to subtract 7s serially from 100 without mistakes.

She was asked to take a clean sheet of paper and draw a face of a clock and place the hands at 20 minutes past 10. She performed this task flawlessly. She was able to correctly copy two overlapping pentagons.

When asked to interpret the proverb, “Don’t cry over spilled milk,” she replied, “damage is done, crying is not going to help.” She interpreted the proverb, “Grass is always greener on the other side of the fence” as “things look better from far... it’s not always true.”

For the similarity between a cat and a dog, she stated, “both pets.” For the similarity between a chair and a table, she stated, “four legs, they are used to sit, eat...”

SUMMARY OF OPINION

Dr. Charu Desai is a 70-year-old woman of Indian origin, who has been residing in Worcester, Massachusetts since 1974. She was employed at the Department of Radiology at UMass since January 6, 1992. She was promoted to the rank of Associate Clinical Professor. She was terminated from her job on March 17, 2019. Dr. Desai described that she was committed to her work, she “lived for work” and valued her opportunity to practice her profession, teach and be of service to her colleagues, “I went an extra mile.” She described being subjected to discriminatory treatment, being denied reasonable accommodations, and then handed a letter of termination on March 14 2018, falsely accused based on unfounded complaints, informing her termination date of March 17, 2019. During the last year at work, she was prevented from reading CT scans despite specialization in this area, per completion of fellowship training at UMass. Dr. Desai had no malpractice law suits and other than allegations presented by her department chair, she had no complaints against her. She was highly regarded by students, residents, technical personnel, and colleagues. During her last year of employment, Dr. Desai filed several grievances but these did not produce any resolution.

Dr. Desai described her reaction to discriminatory treatment culminating in being terminated from work as highly stressful and degrading. She characterized it as “premeditated murder.” She explained, “I lived to work. It was purpose of my life. And somebody stopped it, and without warning.” She addressed the dichotomy in her feelings. On one hand being a committed and devoted professional and having high regard for her place of employment; and on the other hand, being degraded at the same place by new administration.

As a result of her experiences at workplace, Dr. Desai started seeing a psychiatrist. She noted that she was reluctant to see anyone, however, agreed at the insistence of her husband. She started seeing Dr. Cutler on 5/28/20. Dr. Cutler diagnosed Dr. Desai with Major Depressive Disorder and prescribed an antidepressant, Cymbalta.

As per DSM5, the criteria for diagnosis of Depression are the following:

A. Five (or more) of the following symptoms have been present during the same 2-week period and represent a change from previous functioning; at least one of the symptoms is either (1) depressed mood or (2) loss of interest or pleasure.

Note: Do not include symptoms that are clearly attributable to another medical condition.

1. Depressed mood most of the day, nearly every day, as indicated by either subjective report (e.g., feels sad, empty, or hopeless) or observation made by others (e.g., appears tearful). (Note: In children and adolescents, can be irritable mood.)
2. Markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day (as indicated by either subjective account or observation).
3. Significant weight loss when not dieting or weight gain (e.g., a change of more than 5% of body weight in a month), or decrease or increase in appetite nearly every day. (Note: In children, consider failure to make expected weight gain.)
4. Insomnia or hypersomnia nearly every day.
5. Psychomotor agitation or retardation nearly every day (observable by others; not merely subjective feelings of restlessness or being slowed down).
6. Fatigue or loss of energy nearly every day.
7. Feelings of worthlessness or excessive or inappropriate guilt (which may be delusional) nearly every day (not merely self-reproach or guilt about being sick).
8. Diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or as observed by others).
9. Recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide.

B. The symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.

C. The episode is not attributable to the physiological effects of a substance or another medical condition.

Dr. Desai clearly meets criteria for diagnosis of Depression. She has a persistent depressed mood, loss of interest in pleasurable activities, loss of appetite and sleep disturbances. She feels tired has low energy levels. She is not motivated. She has developed excessive feelings of worthlessness, precipitated by her degrading termination from her work. She perceives herself as with diminished ability to focus or concentrate. Although she denies suicidal ideation, she expressed a sense of desperation in that she lost the meaning of her life, as her identity was in considerable part based on her professional achievements.

Although Ms. Desai does not meet the full criterial of posttraumatic stress disorder, she does have significant symptomatology. She avoids driving by UMass. When she has to visit UMass for her annual checkups, she avoids visiting her department although would like to see some of her colleagues. She correlates the onset of her symptoms with the traumatic experience of humiliating termination, comparing it to “premeditated murder.” She wakes up and is unable to go back to sleep because she has distressing and intrusive recollections of the events which took place at her workplace.

Regarding prognosis, clinically the case is complicated as it involves unresolved and conflicting emotions and significant cognitive dissonance. On one hand, Dr. Desai is expressing warm and positive feelings towards her institution and has a deep sense of appreciation for her education, professional development and privilege to practice. On the other hand, she is highly traumatized by the same institution. This resembles a persisting and highly abusive relationship, which culminated in degrading disposal, and is unlikely to be resolved.

To summarize, it is my opinion with a reasonable degree of medical certainty that Dr. Charu Desai meets criteria for diagnosis of Major Depressive Disorder, which has become chronic. In addition, she has

considerable symptomatology of Posttraumatic Stress Disorder. Her mental conditions were precipitated and are a direct result of her experiences at her workplace. Her prognosis is poor.

The above report and opinion are based on my interview of Dr. Charu Desai and review of available collateral information. All opinions in this report are expressed to a reasonable degree of medical certainty. Should any additional information become available, I reserve my right to review it and consider it in conjunction with my opinion. Should you have any questions, please do not hesitate to contact me.

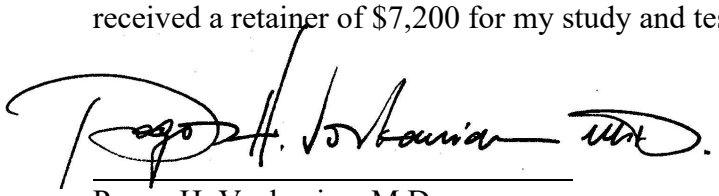
Respectfully submitted,

Pogos H. Voskenian, M.D.
Diplomate of American Board of
Psychiatry and Neurology in
Psychiatry and Forensic Psychiatry

As required by F. R. Civ. Pro. 26(a)(2)(B) regarding the opinions of expert witnesses I further state the following:

Attached is a copy of my current curriculum vita, which includes a list of cases that I have testified in over the past four years current as of this date.

I hereby state that I am being compensated as an expert in this case at the rate of $360.00 per hour. I have spent approximately 24 hours up to this point on this case, and have received a retainer of $7,200 for my study and testimony.



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PROFESSIONAL CERTIFICATIONS:

1998-	American Board of Psychiatry and Neurology in the subspecialty of Forensic Psychiatry # 803
2008 and 2017 -	Re-Certified by the American Board of Psychiatry and Neurology in the subspecialty of Forensic Psychiatry
1997-	American Board of Psychiatry and Neurology in the specialty of Psychiatry # 44509
2007and 2017 -	Re-Certified by the American Board of Psychiatry and Neurology in the specialty of Psychiatry
1993-	National Board of Medical Examiners # 403213
LICENSES:	NJ: MA 72692; PA: #MD-061897-L; LA: R# 052804, L# 09954R; CA: #G082216; VA: #0101056447

PROFESSIONAL MEMBERSHIPS:

1987-	American Medical Association
1992-	American Psychiatric Association
1995-	American Academy of Psychiatry and the Law
1999-	Pennsylvania Psychiatric Association
1999-	Philadelphia Psychiatric Society
2002-	American Academy of Forensic Sciences

PROFESSIONAL COMMITTEES AND ADMINISTRATIVE SERVICE:

Has served as the Chairman of Private Practice Committee for the American Academy of Psychiatry and the Law. Has also served on committees of Directors of Forensic Psychiatry Fellowship Programs and International Relationships Committee with the American Academy of Psychiatry and the Law and on Pennsylvania Forensic Rights and Treatment Conference-Program Planning Committee.

AWARDS:

1999-2000 &	Teacher of the Year Award, MCP HAHNEMANN UNIVERSITY, Department of Psychiatry
2001-2002	*Voted as teacher of the year by graduating class of psychiatry residents at* MCP-*Hahnemann*

CURRENT OCCUPATIONS:

1998-	PRIVATE PRACTICE - GENERAL AND FORENSIC PSYCHIATRY, contractual clinical services, PA and NJ
1998-	Consultant, US Pretrial Services United States District Court, Eastern District of Pennsylvania. Philadelphia, PA
2002-	Consultant, US Probation Office, Eastern District of Pennsylvania. Philadelphia, PA
2004-	Consultant, Department of State - Bureau of Professional and Occupational Affairs, PA

Academic Affiliation:

1998-	Associate Clinical Professor of Psychiatry Drexel University College of Medicine (MCP Hahnemann University), Directing and Organizing Forensic Psychiatry Course, Philadelphia, PA

Hospital Affiliations:

1999-	HAHNEMANN UNIVERSITY MEDICAL CENTER, Philadelphia, PA
1999-	JEANS HOSPITAL, Philadelphia, PA

RECENT OCCUPATIONS:

2002- 2016	Consultant, Department of Human Services, NJ.
2000-2011	Consultant, Gaudenzia House, Philadelphia and West Chester, PA
1998-2000	Director, Correctional Mental Health Services for the City of Philadelphia Prison System. MCP HAHNEMANN UNIVERSITY, Philadelphia, Pennsylvania Assistant Professor of Psychiatry. Director, Forensic Psychiatry Program
1997-1998	MEDICAL COLLEGE OF VIRGINIA, Richmond, Virginia Assistant Professor of Psychiatry, Director, Psychiatry and Law Program Forensic Psychiatrist, Central State Hospital, Forensic Unit

EDUCATIONAL BACKGROUND:

1996-97	TULANE UNIVERSITY MEDICAL CENTER. New Orleans, Louisiana Forensic Psychiatry Fellow
1992-96	TULANE UNIVERSITY MEDICAL CENTER Psychiatry Resident

1987-92	UNIVERSITY OF MASSACHUSETTS MEDICAL SCHOOL. Worcester, Massachusetts M.D. Degree
1984-86	HARVARD UNIVERSITY EXTENSION. Cambridge, Massachusetts Pre-med Program
1974-79	YEREVAN POLYTECHNICAL INSTITUTE. Yerevan, Armenia B.S. Degree: Engineering, Major: Automobile Roads and Bridges

FORENSIC EXPERIENCE:

1996-97	FELICIANA FORENSIC FACILITY Jackson, Louisiana Forensic Psychiatric Services, Treatment and Forensic Evaluations
1996-97	FORENSIC SERVICES, JEFFERSON PARISH HUMAN SERVICES AUTHORITY New Orleans, Louisiana Providing Forensic Evaluations for the 24th Judicial District Court
1996-97	NEW ORLEANS FORENSIC AFTER CARE CLINIC New Orleans, Louisiana Outpatient treatment, evaluations and monitoring of NGRI's and of conditionally released mentally ill
1996-97	HUNT CORRECTIONAL FACILITY Gonzales, Louisiana Psychiatric Evaluations and Treatment of Inmates
1997-98	MEDICAL COLLEGE OF VIRGINIA Richmond, Virginia Director, Psychiatry and Law Program. Providing Forensic Evaluations for the City Courts
1997-98	CENTRAL STATE HOSPITAL, FORENSIC UNIT Petersburg, Virginia Treatment and Forensic Evaluations for State Courts, defense and prosecution
1998-	PRIVATE PRACTICE-GENERAL AND FORENSIC PSYCHIATRY Philadelphia, Pennsylvania Treatment and Forensic Evaluations in civil and criminal cases

Has conducted over fifty lectures, workshops and seminars on the topics related to psychiatry and psychiatry and the law, including insanity defense, diminished capacity, capital sentencing, sex offender evaluations, competency to stand trial, competency to waive Miranda Rights, testimonial capacity / competency to testify as a witness, violence risk assessment, suicide risk assessment, psychiatric malpractice, standards of care, risk management, provision of psychiatric services in jails and prisons / correctional psychiatry, ethics in the practice of forensic psychiatry, testamentary capacity / competency to make a will, psychiatric disability evaluations, psychiatric evaluations under Americans with Disabilities Act, sexual harassment, detection of malingering and exaggeration of signs and symptoms of mental illness...

Directed and organized Forensic Psychiatry Course at Medical College of Virginia (1997and 1998). Since 1998 to present time at MCP Hahnemann (currently Drexel University College of Medicine) developed, directs and organizes Forensic Psychiatry Course.
From 1998 to 2000, as a full time faculty at MCPHahnemann and as a director of Philadelphia Prison System Mental Health Services provided rotations for medical students, psychiatric residents (from MCP Hahnemann and Temple University) and psychology interns from Widener.

From 2000 to present time as a voluntary faculty and utilizing private practice and private contracts, continues to provide rotations for psychiatric residents of Drexel University addressing issues in clinical and forensic psychiatry, as well as substance dependence and correctional psychiatry.

CLINICAL EXPERIENCE:

1998-	Private Practice/Clinical Services for individuals with chronic mental illness and with co-occurring disorders.
1998-00	Director, Philadephia Prison System Mental Health Services/Provision of Clinical Services to inmates Philadelphia, PA
1993-97	CHARITY HOSPITAL OF NEW ORLEANS New Orleans, Louisiana Contract Physician, Emergency Psychiatric Services and Substance Abuse Unit
1994-97	NEW ORLEANS PARISH CRISES INTERVENTION MENTAL HEALTH SERVICES New Orleans, Louisiana

	Contract Physician. Emergency Psychiatric Evaluations of Children and Families in Crises.
1994-97	NEW ORLEANS VETERANS ADMINISTRATION HOSPITAL New Orleans, Louisiana Contract Physician, Psychiatric Services
1994-97	JEFFERSON PARISH CRISES INTERVENTION MENTAL HEALTH SERVICES Kenner, Louisiana Contract Physician. Emergency Psychiatric Evaluations of Children and Families in Crises.
1994-97	CENTRAL STATE HOSPITAL Alexandria, Louisiana Contract Physician. Psychiatric Services
1995-96	COMMUNITY PSYCHIATRIC SERVICES Lafayette, Louisiana Contract Physician. Psychiatric Services for the Elderly in the Nursing Homes in Lafayette area.
1995-96	NEW ORLEANS VETERANS ADMINISTRATION HOSPITAL New Orleans, Louisiana *Co-leading PTSD groups for Veterans*

PRACTICE DESCRIPTION:

As a contractor for Department of State of Pennsylvania, Bureau of Professional and Occupational Affairs, services contracted for assessments of impaired professionals and licensing related issues.

Contractual agreement with United States Pretrial Services includes forensic psychiatric assessments of defendants and assistance to Court in offering opinions regarding competency to stand trial, criminal responsibility and dispositional issues, etc.

In Forensic Practice formulated over 1000 opinions for State and Federal Courts, Governmental Agencies and Insurance Companies in areas related to insanity defense, diminished capacity, capital sentencing/mitigation, sex offenders, competency to stand trial, competency to waive Miranda Rights, testimonial capacity, fitness for duty, ADA/employment issues, psychiatric malpractice, personal injury, disability, etc.

As a contractor for New Jersey Department of Human Services activities included forensic evaluations of sex offenders and offering opinions to the court regarding civil commitment. Recent services include clinical treatment and restoration to competency of mentally ill offenders at Trenton State Psychiatric Hospital.

Currently in the process of developing of psychiatric clinical services site/inpatient facility in developing countries/Armenia.

As a contractor for Gaudenzia (Philadelphia) clinical activities included development of treatment plan, psychiatric treatment and rehabilitation of dually diagnosed voluntary patients as well as court stipulated patients and inmates conditionally released from the City and State Correctional facilities. Services at Gaudenzia - Kindred House included consultations, development of treatment plan, psychiatric treatment and rehabilitation of dually diagnosed pregnant women or women with young children.

Services at West Chester Facility included treatment of voluntary and court stipulated patients. This is a diverse population of both sexes, and ranging in age from teenagers to elderly. Services at Gaudenzia include consultations, case reviews at treatment team meetings and ongoing staff education.

As an attending physician at St. Joseph's hospital, services included psychiatric treatment and detoxification from alcohol and illicit substances.

As the director of mental health services for Philadelphia Prison System administrative activities included supervision of staff of 50 health professionals; clinical services included provision of direct to inmates in general population and inpatient hospital; academic activities included training and education of staff, medical students, psychiatry residents and psychology interns. Additionally, provided assessments and supervised forensic services for the court.

PRESENTATIONS, LECTURES, WORKSHOPS AND SEMINARS:

July 1998	Insanity Defense: Historical Background, Approach to Evaluations, Report Preparation, and Expert Testimony. *Developed and Presented*

	Witness Testimony. Seminar. Medical College of Virginia, Richmond, VA
July 1998	Psychiatric Malpractice. Seminar. *Developed and Presented* Medical College of Virginia, Richmond, VA
August 1998	Right to Treatment, Right to Refuse Treatment, and Informed Consent. Seminar. *Developed and Presented* Medical College of Virginia, Richmond, VA
August 1998	Psychiatric Disability Assessments for Workers' Compensation, Social Security Administration, Insurance Companies, and in Personal Injury litigation. Seminar. *Developed and Presented* Medical College of Virginia, Richmond, VA
July 1999	Civil Commitment, Competency, Reporting Abuse and Threats of Violence. Seminar. *Developed and Presented* MCP Hahnemann University. School of Medicine. Philadelphia, PA
October 1999	Risk of Violence Assessments. Lecture. *Developed and Presented* MCP Hahnemann University. School of Medicine. Philadelphia, PA
November 1999	Why Do We Need To Do Things Differently: Alternatives for Improving Delivery of Mental Health Care. Case Study. *Coordinated and Participated.* The 7th Annual Forensic Rights and Treatment Conference: Alternatives to Criminalization and Incarceration. Grantville, PA
December 1999	Suicide Prevention in Jails, Lock-ups, and Prisons. Presentation. The 7th Annual Forensic Rights and Treatment Conference: Alternatives to Criminalization and Incarceration. *Developed and Presented* Grantville, PA
December 1999	Mental Health Services in Philadelphia Prison System. Workshop. The 7th Annual Forensic Rights and Treatment Conference: Alternatives to Criminalization and Incarceration. *Participated.* Grantville, PA
December 1999	Practice of Correctional Psychiatry. Grand Rounds. *Developed and Presented* MCP Hahnemann University School of Medicine. Philadelphia, PA
February 2000	Special Issues in Delivery of Correctional Mental Health Services. Seminar. *Developed and Presented* MCP Hahnemann University School of Medicine. Philadelphia, PA
February 2000	Recognizing Suicidal Behavior. Lecture. *Developed and Presented* Holmesburg Prison. Correctional Officer Training Academy. Philadelphia, PA
February 2000	Physician Assisted Suicide. Journal Club. *Coordinated* MCP Hahnemann University School of Medicine. Philadelphia, PA
March 2000	Use of SSRI's in Reduction of Suicidal Behavior in Patients with Repeated Suicide Attempts But Not Major Depression. Journal Club. *Coordinated* MCP Hahnemann University School of Medicine. Philadelphia, PA
March 2000	Competency Evaluations in Civil and Criminal Cases: Competency to Stand Trial, Testimonial Capacity, Competency to Consent to Treatment, and

	Testamentary Capacity. Seminar. *Developed and Presented* MCP Hahnemann University School of Medicine. Philadelphia, PA
March 2000	Affirmative Defenses - Mental State at the Time of the Offense Evaluations: Insanity Defense and Diminished Capacity. Seminar. *Developed and Presented* MCP Hahnemann University School of Medicine. Philadelphia, PA
March 2000	Depression and suicide attempts among physicians. Journal Club. *Coordinated.* MCP Hahnemann University School of Medicine. Philadelphia, PA
March 2000	Introduction to the Practice of Forensic Psychiatry. Seminar. *Developed and Presented.* MCP Hahnemann University School of Medicine. Philadelphia, PA
April 2000	Psychiatric Malpractice. Minimizing the Risk of Litigation and Improving Patient Care. Seminar. *Developed and Presented* MCP Hahnemann University School of Medicine. Philadelphia, PA
April 2000	Psychiatric Issues in Civil Litigation. Seminar. *Developed and Presented* MCP Hahnemann University School of Medicine. Philadelphia, PA
May 2000	Forensic Report Writing and Expert Witness Testimony. Seminar. *Developed and Presented* MCP Hahnemann University School of Medicine. Philadelphia, PA
February 2000	Understanding the Suicidal Patient. Lecture. *Developed and Presented* Holmesburg Prison. Correctional Officer Training Academy. Philadelphia, PA
July 2000	Risk Management Seminar, *Developed and Presented* MCP Hahnemann University School of Medicine. Philadelphia, PA
November 2000	Psychiatrist for the Court vs. Psychiatrist for the Patient. Presentation The Eighth Annual Forensic Conference-Forensic Partnerships in the New Millennium. *Developed and Presented* Grantville, PA
January 2001	Ethical Issues in the Practice of Forensic Psychiatry. Seminar MCP Hahnemann University School of Medicine. Philadelphia, PA
February 2001	Correctional Psychiatry. Seminar. *Developed and Presented* MCP Hahnemann University School of Medicine. Philadelphia, PA
February 2001	Detection of Malingering. Seminar. *Developed and Presented* MCP Hahnemann University School of Medicine. Philadelphia, PA
February 2001	Sex Offender Evaluations and the Law. Seminar. *Developed and Presented* MCP Hahnemann University School of Medicine. Philadelphia, PA
February 2001	Ethical Dilemmas in the Practice of Forensic Psychiatry. Grand Rounds. *Developed and Presented* MCP Hahnemann University School of Medicine. Philadelphia, PA
March 2001	Risk Management. Seminar. *Developed and Presented* MCP Hahnemann University School of Medicine. Philadelphia, PA
March 2001	Civil Competency Evaluations. Seminar. *Developed and Presented* MCP Hahnemann University School of Medicine. Philadelphia, PA

March 2001	Competency Evaluations in Criminal Cases: Competency to Stand Trial, Competency to Waive Miranda Rights. Seminar. *Developed and Presented* MCP Hahnemann University School of Medicine. Philadelphia, PA
March 2001	Capital Sentencing and Risk of Violence Assessments. Seminar. *Developed and Presented.* MCP Hahnemann University School of Medicine. Philadelphia, PA
March 2001	Psychiatric Disability Evaluations under Americans with Disabilities Act. Seminar. *Developed and Presented* MCP Hahnemann University School of Medicine. Philadelphia, PA
April 2001	Practice of Forensic Psychiatry. Seminar. *Developed and Presented* MCP Hahnemann University School of Medicine. Philadelphia, PA
April 2001	Competency Evaluations in Civil Cases: Testamentary Capacity, Testimonial Capacity, Informed Consent. Seminar. *Developed and Presented* MCP Hahnemann University School of Medicine. Philadelphia, PA
April 2001	Affirmative Defenses: Historical Background and Current Trends. Seminar. *Developed and Presented* MCP Hahnemann University School of Medicine. Philadelphia, PA
April 2001	Civil Litigation. Seminar . *Developed and Presented* MCP Hahnemann University School of Medicine. Philadelphia, PA
May 2001	Psychiatric Malpractice. Seminar. *Developed and Presented* MCP Hahnemann University School of Medicine. Philadelphia, PA
May 2001	Forensic Report Preparation and Ethical Principles of Expert Witness Testimony. Seminar. *Developed and Presented* MCP Hahnemann University School of Medicine. Philadelphia, PA
May 2001	Sexual Harassment. Seminar. *Developed and Presented* MCP Hahnemann University School of Medicine. Philadelphia, PA
June 2001	Principles of Ethics and Expert Witness Testimony. *Developed and Presented* American Lawyer Media, Philadelphia, PA
November 2001	Mental Health Professionals and the Death Penalty: An Examination of the Professional's Role. Ninth Annual Forensic Conference-Forensic Rights and Treatment Conference. *Participated and Coordinated.* Grantville, PA
January 2002	Ethical Dilemmas in the Practice of Forensic Psychiatry. Seminar. *Developed and Presented* MCP Hahnemann University School of Medicine. Philadelphia, PA
February 2002	Correctional Psychiatry. Seminar. *Developed and Presented* MCP Hahnemann University School of Medicine. Philadelphia, PA
February 2002	Sex Offender Evaluations. Seminar. *Developed and Presented* MCP Hahnemann University School of Medicine. Philadelphia, PA
February 2002	Competency Evaluations in Criminal Cases. Seminar. *Developed and Presented* MCP Hahnemann University School of Medicine. Philadelphia, PA

March 2002	Practice of Forensic Psychiatry. Seminar. *Developed and Presented* MCP Hahnemann University School of Medicine. Philadelphia, PA
March 2002	Affirmative Defenses-Mental State at the time of the Offense Evaluations. *Developed and Presented* MCP Hahnemann University School of Medicine. Philadelphia, PA
October 2002	Establishing Forensic Practice. Course. *Developed and Presented section on* Forensic Report Preparation. *Participated in the overall course presentation.* American Academy of Psychiatry and the Law. Newport Beach, CA
November 2002	Practice of Forensic Psychiatry. *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
December 2002	Competency Evaluations in Civil and Criminal Cases. Forensic Rights and Treatment Conference: Collaboration-Solution to Diverse Systems. *Developed and Presented* Harrisburg, PA
December 2002	Mental Health Avenues for the Capital Murder Case. *Participated and Coordinated.* Forensic Rights and Treatment Conference: Collaboration-Solution to Diverse Systems. Harrisburg, PA
January 2003	Ethical Issues in the Practice of Forensic Psychiatry *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
February 2003	Practice of Psychiatry in Correctional Setting. *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
February 2003	Affirmative Defenses: Mental State at the time of the Offense Evaluations. *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
February 2003	Competency to Stand Trial, and other Competency Evaluations in Civil and Criminal Cases. *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
March 2003	Sex Offender Evaluations. *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
April 2003	Forensic Report Preparation. *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
April 2003	Psychiatrist in Court: Expert Witness Testimony. *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
July 2003	Legal Issues in Emergency Room Psychiatry. *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
October 2003	Insanity Defense. Cross-cultural Perspective. *Developed and Presented* Bridging Eastern and Western Psychiatry. International Conference.

	Yerevan. Armenia
October 2003	Cross-cultural Psychiatry. Immigration Stress. *Developed and Presented* Bridging Eastern and Western Psychiatry. International Conference. Yerevan. Armenia
October 2003	Speaker. Forensic Psychiatry Interest Group. Drexel University College of Medicine. Philadelphia, PA
October 2003	Advanced Course. Forensic Psychiatry Practice. *Developed and Presented section on* Cross-Cultural Competence in Forensic Assessments. *Participated in the overall course.* American Academy of Psychiatry and the Law. San Antonio. Texas.
December 2003	The Role of Mental Health Professional in Criminal Litigation. *Developed and Presented* Forensic Rights and Treatment Conference / Emerging Trends: Legislation, Application and Clinical Practice. Grantville, PA
January 2004	Ethics in the Practice of Forensic Psychiatry. *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
February 2004	Correctional Psychiatry. *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
February 2004	Insanity Defense and Diminished Capacity. *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
February 2004	Competency Evaluations in Civil and Criminal Cases. *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
February 2004	Sex Offender Evaluations. *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
April 2004	Forensic Report Writing. *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
April 2004	Standards of Expert Witness Testimony. *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
July 2004	Legal Issues in Psychiatric Emergencies. *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
December 2004	12th Annual Forensic Rights and Treatment Conference / Systems in Partnership: Program and System Challenges for Transitioning Community Corrections Clients with Mental Illness and Co-Occurring Disorders in a Community Corrections Setting. What Works and What Does Not. Co-d*eveloped and presented,*Grantville, PA 12th Annual Forensic Rights and Treatment Conference / Systems in Partnership: Values, Approaches and Goals. Co-d*eveloped and presented,* Grantville, PA
January 2005	Ethics in the Practice of Forensic Psychiatry. *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
February 2005	Correctional Psychiatry. *Developed and Presented*

	Drexel University College of Medicine. Philadelphia, PA
February 2005	Competency Evaluations-Civil and Criminal. *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
March 2005	Sex Offender Treatment and Evaluations. Civil Commitment. *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
April 2005	Forensic Report Writing. *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
May 2005	Standards of Expert Witness Testimony. *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
July 2005	Psychological and Psychiatric Evaluations Used During the Trial Process in Pennsylvania. Full day course. *Developed and Presented* Lorman Educational Services. Wyndham Hotel and Resort. Philadelphia, PA
October 2005	Speaker. Forensic Psychiatry Interest Group. Drexel University College of Medicine. Philadelphia, PA
January 2006	Ethical Issues in the Practice of Forensic Psychiatry *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
February 2006	Correctional Psychiatry *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
	Competency Evaluations in Criminal Cases *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
March 2006	Affirmative Defenses-Mental State at the Time of the Offense Evaluations *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
April 2006	Legal and Ethical Requirements: Expert Witness Testimony *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
	Forensic Report Preparation *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
	Transitioning Community Corrections Clients with Mental Illness and Co-Occurring Disorders *Co-developed and co-presented* Hilton Hotel, Philadelphia, PA
October 2006	Course: Forensic Psychiatry Practice: Ethics, Business, Report Preparation, Legal Aspects *Moderator* American Academy of Psychiatry and the Law. Chicago, Il.
November 2006	Clients with Mental Illness and Co-Occurring Disorders in a Community Corrections Setting.

What Works and What Does Not. Program and System Challenges for Transitioning Community Corrections
Co-d*eveloped and co- presented*
14th Annual Forensic Rights and Treatment Conference: Front Door Diversion: Back door diversion
Grantville, PA

November 2006
Ethical Issues in the Practice of Psychiatry Forensic Psychiatry. Seminar
Developed and Presented
14th Annual Forensic Rights and Treatment Conference: Front Door Diversion: Back door diversion
Grantville, PA

January 2007
Ethical Issues in the Practice of Forensic Psychiatry
Developed and Presented
Drexel University College of Medicine. Philadelphia, PA

February 2007
Correctional Psychiatry
Developed and Presented
Drexel University College of Medicine. Philadelphia, PA

Competency Evaluations in Criminal Cases
Developed and Presented
Drexel University College of Medicine. Philadelphia, PA

March 2007
Affirmative Defenses-Mental State at the Time of the Offense Evaluations
Developed and Presented
Drexel University College of Medicine. Philadelphia, PA

April 2007
Legal and Ethical Requirements: Expert Witness Testimony
Developed and Presented
Drexel University College of Medicine. Philadelphia, PA

Forensic Report Preparation
Developed and Presented
Drexel University College of Medicine. Philadelphia, PA

Ethics and Legal Medicine
Lecture for Medical Students
Developed and Presented
Drexel University College of Medicine. Philadelphia, PA

July 2007
American Parole and Probation Association Conference
Role of a psychiatrist in Therapeutic Communities
Co-developed and co- presented
Marriott Hotel, Philadelphia, PA

October 2007
Course: Advanced - Forensic Psychiatry Practice
Moderator
American Academy of Psychiatry and the Law. Miami, Florida

November 2007
Ethical Issues in the Practice of Psychiatry Forensic Psychiatry. Seminar
Developed and Presented
15th Annual Forensic Rights and Treatment Conference
Grantville, PA

January 2008
Ethical Issues in the Practice of Forensic Psychiatry
Developed and Presented

	Drexel University College of Medicine. Philadelphia, PA
February 2008	Correctional Psychiatry *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
	Competency Evaluations in Criminal Cases *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
March 2008	Affirmative Defenses-Mental State at the Time of the Offense Evaluations *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
April 2008	Legal and Ethical Requirements: Expert Witness Testimony *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
	Forensic Report Preparation *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
	Ethics and Legal Medicine Lecture for Medical Students *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
November 2008	Seminar for medical student related to psychiatry, forensic psychiatry and ethics Drexel University College of Medicine. Philadelphia, PA
February 2009	Ethical Issues in the Practice of Forensic Psychiatry *Developed and Presented* Grand Rounds. Temple University School of Medicine. Philadelphia, PA
	Practice of Psychiatry in Correctional Setting. *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
	Ethical Issues in the Practice of Forensic Psychiatry *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
March 2009	Affirmative Defenses-Mental State at the Time of the Offense Evaluations *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
April 2009	Ethics and Legal Medicine Lecture for Medical Students *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
	Correctional Psychiatry *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
	Competency to Stand Trial, and other Competency Evaluations in Civil and Criminal Cases. *Developed and Presented*

	Drexel University College of Medicine. Philadelphia, PA
December 2010	Workshop: Affirmative Defenses-Mental State at the Time of the Offense Evaluations *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
	Workshop: Competency to Stand Trial, and other Competency Evaluations in Civil and Criminal Cases. *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
January 2011	Correctional Psychiatry *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
	Ethics in Practice of Psychiatry and Forensic Psychiatry *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
	Sex Offender Evaluations *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
April 2011	Ethics and Legal Medicine Lecture for Medical Students *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
December 2011	Ethics in the practice of Psychiatry and Forensic Psychiatry *Developed and Presented* Forensic Rights and Treatment Conference Grantville, PA
January 2011	Insanity Defense *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
January 2011	Competency Assessments in Civil and Criminal cases *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
February 2011	Conducting Independent Medical Evaluations/Psychiatric Disability *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
February 2011	Psychiatric Malpractice *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
April 2012	Ethics and Legal Medicine Lecture for Medical Students *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
December 2012	Workshop: Affirmative Defenses-Mental State at the Time of the Offense Evaluations and Competency to stand trial *Developed and Presented*

Drexel University College of Medicine. Philadelphia, PA

December 2012
Forensic Report Preparation
Developed and Presented
Drexel University College of Medicine. Philadelphia, PA

December 2012
Insanity Defense
Developed and Presented
Drexel University College of Medicine. Philadelphia, PA

December 2012
Competency Assessments in Civil and Criminal cases
Developed and Presented
Drexel University College of Medicine. Philadelphia, PA

December 2012
Workshop: Affirmative Defenses-Mental State at the Time of the Offense Evaluations and Competency to stand trial
Developed and Presented
Drexel University College of Medicine. Philadelphia, PA

January 2013
Conducting Independent Medical Evaluations/Psychiatric Disability
Developed and Presented
Drexel University College of Medicine. Philadelphia, PA

January 2013
Psychiatric Malpractice
Developed and Presented
Drexel University College of Medicine. Philadelphia, PA

January 2013
Sex Offender Evaluations
Developed and Presented
Drexel University College of Medicine. Philadelphia, PA

January 2013
Correctional Psychiatry
Developed and Presented
Drexel University College of Medicine. Philadelphia, PA

April 2013
Ethics and Legal Medicine
Lecture for Medical Students
Developed and Presented
Drexel University College of Medicine. Philadelphia, PA

July 2013
Understanding the predatory nature of non-stranger rapists
Lecture / CLE Course/Aequitas
Co-Presented
Austin, Texas

December 2013
Competency Assessments in Civil and Criminal cases
Developed and Presented
Drexel University College of Medicine. Philadelphia, PA

December 2013
Workshop: Affirmative Defenses-Mental State at the Time of the Offense Evaluations and Competency to stand trial
Developed and Presented
Drexel University College of Medicine. Philadelphia, PA

January 2014
Conducting Independent Medical Evaluations/Psychiatric Disability
Developed and Presented

	Drexel University College of Medicine. Philadelphia, PA
January 2014	Psychiatric Malpractice *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
January 2014	Sex Offender Evaluations *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
January 2014	Correctional Psychiatry *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
April 2014	Ethics and Legal Medicine Lecture for Medical Students *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
November 2015	Insanity Defense, Competency to Stand Trial, Ethics in the practice of Psychiatry and Forensic Psychiatry, Competency Evaluations in Civil Cases, Correctional Psychiatry, Psychiatric Disability, and Sex Offender evaluations. *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
November 2016	Insanity Defense, Competency to Stand Trial, Ethics in the practice of Psychiatry and Forensic Psychiatry, Competency Evaluations in Civil Cases, Correctional Psychiatry, Psychiatric Disability, and Sex Offender evaluations. *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
November 2017	Insanity Defense, Competency to Stand Trial, Ethics in the practice of Psychiatry and Forensic Psychiatry, Competency Evaluations in Civil Cases, Correctional Psychiatry, Psychiatric Disability, Psychiatric Malpractice, Disability Evaluations, Sex Offender evaluations, and Forensic Report Preparation. *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA
November 2018	Insanity Defense, Competency to Stand Trial, Ethics in the practice of Psychiatry and Forensic Psychiatry, Competency Evaluations in Civil and Criminal Cases, Correctional Psychiatry, Evaluations under Americans with Disabilities Act, Psychiatric Disability, Psychiatric Malpractice, Disability Evaluations, Sex Offender evaluations, and Forensic Report Preparation. *Developed and Presented* Drexel University College of Medicine. Philadelphia, PA

FORENSIC PSYCHIATRIC EVALUATIONS:

24th Judicial District Court. Gretna, Louisiana

5/5/96	State of Louisiana v. Glenn Tollett	96-4383	Hon. Judge Sassone
5/30/96	State of Louisiana v. Demetrius Black	96-1878	Hon. Judge Richards
6/17/96	State of Louisiana v. Lois Jones	96-2417	Hon. Judge Kollin
6/18/96	State of Louisiana v. Al Williams	96-1878	Hon. Judge Sassone
7/1/96	State of Louisiana v. Terry Havies	95-5434	Hon. Judge Tiemann
7/10/96	State of Louisiana v. Marcel Thibodeux	96-1613; 1614	Hon. Judge Zeno
7/17/96	State of Louisiana v. Mathew Domino	96-1878	Hon. Judge Grant
7/22/96	State of Louisiana v. Gerald Rodrigue	96-0855	Hon. Judge Sassone
7/24/96	State of Louisiana v. Nelson Cortez	95-5590	Hon. Judge Chehardy

8/2/96	State of Louisiana v. Michael Smith	96-4727	Hon. Judge Sassone
8/6/96	State of Louisiana v. Harrell Jones	96-0480	Hon. Judge Sassone
8/6/96	State of Louisiana v. Kenneth Young	96-3596	Hon. Judge Rotchild
8/8/96	State of Louisiana v. Kevin Besse	95-4526; 96-1389; 1624	Hon. Judge Burns
8/13/96	State of Louisiana v. Darrel Everson	91-4858; 4926; 5446; 92-40	Hon. Judge Loumiet
8/19/96	State of Louisiana v. Daniel Cavalier	95-6272	Hon. Judge Chehardy
8/23/96	State of Louisiana v. Carl Brantley	94-2198	Hon. Judge Sassone
9/17/96	State of Louisiana v. Darrell Braun	96-3226	Hon. Judge McCabe
9/20/96	State of Louisiana v. John London	95-6242	Hon. Judge Green
9/20/96	State of Louisiana v. Stuart Ducote	96-5119	Hon. Judge Burns
9/26/96	State of Louisiana v. Darrell Meyers	96-3596	Hon. Judge Sassone
10/23/96	State of Louisiana v. D. Dillion	96-4757	Hon. Judge Sassone
10/24/96	State of Louisiana v. Darryl Williams	95-1720	Hon. Judge Sassone
11/7/96	State of Louisiana v. Jean Paul Kasdan	96-5388	Hon. Judge Sassone
11/12/96	State of Louisiana v. Suzette Hill	96-2728	Hon. Judge Sassone

Richmond General District Court. Richmond, VA

6/26/97	Commonwealth of Virginia v. Reshard Butler	97-7464	Hon. Judge Robertson
7/9/97	Commonwealth of Virginia v. Alonzo Stephens	97-010496	Hon. Judge Robertson
7/17/97	Commonwealth of Virginia v. Angel Maldonado	97-688; 307	Hon. Judge Robertson
7/17/97	Commonwealth of Virginia v. Elbert Swain	97-7466; 6946-01	Hon. Judge Robertson
7/18/97	Commonwealth of Virginia v. Gerald Brown	97-8450	Hon. Judge Robertson
7/28/97	Commonwealth of Virginia v. Lawrence Harris	97-8390; 5874	Hon. Judge Robertson
8/4/97	Commonwealth of Virginia v. Christopher Barlow	97-9092	Hon. Judge Robertson
8/6/97	Commonwealth of Virginia v. Magnolia Buck	97-7291-02;03: 97-9245; 7756	Hon. Judge Robertson
8/7/97	Commonwealth of Virginia v. Judd Bailey Houck	97-9283	Hon. Judge Robertson
8/14/97	Commonwealth of Virginia v. Yamar L. Davis	97-9588; 9589	Hon. Judge Robertson
8/25/97	Commonwealth of Virginia v. William N. Perry Jr.	97-9727	Hon. Judge Robertson
9/3/97	Commonwealth of Virginia v. Paul J. Hampson	97-010234	Hon. Judge Robertson
9/15/97	Commonwealth of Virginia v. Michael A. Goode	97-10550	Hon. Judge Robertson
9/15/97	Commonwealth of Virginia v. Michael B. Collins	97-10391	Hon. Judge Robertson
9/15/97	Commonwealth of Virginia v. James P. Puliam	97-10645	Hon. Judge Robertson
10/2/97	Commonwealth of Virginia v. Herbert L. Jackson	97-11558	Hon. Judge Robertson
11/19/97	Commonwealth of Virginia v. Lawrence White	97-5667; 97- 13847	Hon. Judge Robertson
12/8/97	Commonwealth of Virginia v. Magnolia Buck	97-14443	Hon. Judge Robertson
1/23/98	Commonwealth of Virginia v. Karen S. Walker	98-421	Hon. Judge Cheek
1/26/98	Commonwealth of Virginia v. Reshard Butler	98-1021through 1024	Hon. Judge Cheek
1/26/98	Commonwealth of Virginia v. Henry Hickman	98-1006	Hon. Judge Robertson
2/3/98	Commonwealth of Virginia v. Kevin D. Flagg	98-1305 through 1309	Hon. Judge Robertson
2/6/98	Commonwealth of Virginia v. Charles Chapman	98-1195	Hon. Judge Robertson
3/13/98	Commonwealth of Virginia v. Raymond Haywood	98-1195	Hon. Judge Cheek
4/23/98	Commonwealth of Virginia v. D.C.Burkhardt	F-98-756	Hon. Judge Lemons
4/23/98	Commonwealth of Virginia v. Brenda Whitaker	97-9799-01; 02	Hon. Judge Cheek
4/24/98	Commonwealth of Virginia v. James A. Flemming	98-4457;4458	Hon. Judge Robertson
4/30/98	Commonwealth of Virginia v. Bellany Ellis	98-5725; 5726; 5482	Hon. Judge Robertson
4/30/98	Commonwealth of Virginia v. Alan Goode	98-5377; 5378	Hon. Judge Robertson
5/19/98	Commonwealth of Virginia v. Bernard Cotman Jr.	98-6042	Hon. Judge Cheek
5/20/98	Commonwealth of Virginia v. Alphonso Scott	98-4675; 98-6139	Hon. Judge Robertson
5/01/98	Commonwealth of Virginia v. Willie Diggs	97-12420-1; 2	Hon. Judge Cheek

Richmond City Juvenile and Domestic Relations Court

2/13/98	Commonwealth of Virginia v. Hilliary O. Thomas	A-63290-1	Hon. Judge Frank
4/8/98	Commonwealth of Virginia v. Bonnie Patterson		Hon. Judge Roberts
4/28/98	Commonwealth of Virginia v. Lamarco Neal McShaw	A-63283-1	Hon. Judge Harris

Richmond Manchester General District Court

12/4/97	Commonwealth of Virginia v. Joseph A. Ford	GC97-20986; 20987	Hon. Judge Rupe
12/24/97	Commonwealth of Virginia v. Roy Cleveland	GL 97-23679	Hon. Judge Rupe
2/25/98	Commonwealth of Virginia v. Joseph J. Molicone, Jr.	GC98-2237;2238; GT98-2239	Hon. Judge Rupe
2/25/98	Commonwealth of Virginia v. Andre Alston Daffery	GC98-2965	Hon. Judge Rupe

Richmond General District Court, Traffic Division. Richmond, VA

2/10/98	Commonwealth of Virginia v. Sherry Elanda Brown	98-000955	Hon. Judge Jamison

Circuit Court of The County of Hanover, VA

1/28/99	Ruth H. Waddy v. Lillian B. Jefferson	In Chancery No: 64-98	Attorney for Plaintiff: Rosemary Halligan, Esq.

Norfolk Circuit Court, VA

8/4/97	Commonwealth of Virginia v. Tobin Jones	Hon. Judge Morrison
10/27/97	Commonwealth of Virginia v. Tobin Jones	Hon. Judge Morrison

Richmond Circuit Court, VA

8/19/97	Commonwealth of Virginia v. Monique Anderson	Hon. Judge Dulling

Circuit Court of Montgomery County, VA

11/3/97	Commonwealth of Virginia v. James Edward Reid	97-1020	Hon. Judge Grubbs Lead Attorney for Defense: Peter A. Theodore, Esq.

Henrico County General District Court, VA

10/29/97	Commonwealth of Virginia v. Russel Cox	Hon. Judge Miller

Culpeper County General District Court, VA

12/17/97	Commonwealth of Virginia v. Leroy Epperson	C-9616-8; 52, 57; C-962000	Hon. Judge Talley Jr.
6/20/97	Commonwealth of Virginia v. John R. Hunley		Hon. Judge Cullen

Dinwiddie County Circuit Court, VA

6/16/98	Commonwealth of Virginia v. John Hines	F93-266	Hon. Judge Dalton

Sussex County Combined Court

5/15/97	Commonwealth of Virginia v. Joshua Johns	Hon. Judge Baker

Arlington General District Court

5/28/98	Commonwealth of Virginia v. Michael Tomlin	C94-1190	Hon. Judge Kelly Jr.

Goochland Juvenile and Domestic Relations Court

9/5/97	Commonwealth of Virginia v. James Whitehurst	Hon. Judge Berry

Henry County Circuit Court, VA

8/13/97	Commonwealth of Virginia v. Arlen Wayne Hollandsworth	97-0518	Hon. Judge Armstrong

Court of Common Pleas, Luzerne County, PA

12/14/99	Commonwealth of Pennsylvania v. Robert Hinkin	CR-0016-99; 0017-99	Hon. Judge Conahan
2/6/01	Lipski v. Wyoming Valley Health Care System		Attorney for Plaintiff Michael J. Kowalski, Esq.
2/6/01	Doblovaski v. Wyoming Valley Health Care System		Attorney for Plaintiff Michael J. Kowalski, Esq.

United States District Court For The Western District Of Virginia, Danville Division

10/4/99	Regina Mae Flora v. Arlen Wayne Hollandsworth	CL97-185; 5345MP617055	Attorney for Defense: Harley W. Duane III, Esq.

Superior Court of New Jersey. Law Division. Passaic County, NJ

12/20/99	Barbara Marton-Rosenberg/for Ruth Marton v. John Krostek	L-2055-98	Attorney for Plaintiff: John Stone, Esq.

Court of Common Pleas, Allegheny County, PA

6/20/00	Estate of George Tenney v. George Ondis et.al	Attorneys for Plaintiff: Lewis, Lewis & Reilly

Bradford County Court of Common Pleas, Bradford County, Troy, PA

2/16/00	Commonwealth of Pennsylvania v. Jennifer Lynn Schanbacher.	Attorney for Defense Robert McGuinnes, Esq.
3/30/01	Commonwealth of Pennsylvania v. Charles Mc Manus	Attorney for Prosecution Todd Hinckley, Esq.
2/25/02	Commonwealth of Pennsylvania v. Fredrick House, Jr.	Attorney for Defense Helen A. Stolinas, Esq.
8/29/07	Commonwealth of Pennsylvania v. Steven Colegrove	Attorney for Defense Helen A. Stolinas, Esq.
11/25/11	Commonwealth of Pennsylvania v. Emily Ruth Bellows Shaffer	Attorney for Defense Helen A. Stolinas, Esq.

Superior Court of New Jersey. Law Division. Bergen County, NJ

3/15/00 Joseph Thornton v. Brogan Cadillac, Inc. L-3872-97 Attorneys for Plaintiff: Helene C. Herbert, Esq. and Helayne M. Weiss, Esq.

Superior Court of New Jersey. Law Division. Glouster County, NJ

11/24/06	Chester E. King et al. v. County of Gloucester, et al. 03-5863	Attorney for Plaintiff Stanley O. King, Esq.
10/18/10	State v. Donald Hetrick, 09000484,	Attorney for Prosecution Dana R. Anton, Esq.
9/21/10	State v. Martina Harding, 08-08-00701-I	Attorney for Prosecution: Mary Pyffer, Esq.
4/19/10	State v Kathleen Siegel 07002278	Attorney for Prosecution: Staci Scheetz, Esq.

Superior Court of New Jersey. Law Division - Criminal, Atlantic County, NJ

6/12/00	State of New Jersey v. John Bennett	98-08-2066a	Attorney for Prosecution - Elizabeth Sylvester, Esq.
9/6/00	State of New Jersey v. Michael Esposito	99-00-2860	Attorney for Prosecution - Elizabeth Sylvester, Esq.
12/22/00	State of New Jersey v. Richard Carrick	99-11-2202	Attorney for Prosecution - Curtis L. Baker
9/25/01	State of New Jersey v. Carlos Moore	00-06-1287B	Attorney for Prosecution – Chester Wiech, Jr., Esq.
5/21/01	State of New Jersey v. Richard DeBow	00-17-1482	Attorney for Prosecution: Cary Shill, Esq.
4/7/03	State of New Jersey v. Navisha Holley	02-08-1072	Attorney for Prosecution: Anne Crater, Esq.
9/20/04	State of New Jersey v. Sharon Lloyd	03-12-2418A	Attorney for Prosecution – Chester Wiech, Jr., Esq.
9/21/04	State of New Jersey v. Navisha Holley	02-08-1762C	Attorney for Prosecution: Janet Gravitz, Esq.
10/12/04	State of New Jersey v. Lavar Winder	03-07-1365D	Attorney for Prosecution: William Merz, Esq.
12/4/06	State of New Jersey v. Mickey Bryant	03-02-0280	Attorney for Prosecution: Dana Litke, Esq.
8/16/06	RE: Patrolman Christopher Mozitis		Honorable Joseph E. Kane
6/1/07	State of New Jersey v. Warren Kennedy	04-01-0135B	Attorney for Prosecution: Diane M. Ruberton, Esq.

Chester County Court of Common Pleas, Chester, PA

4/19/00 James Wells v. Peter Wetherill, James Simpler and Happy Hill Farms, Inc. 98-03194 Attorney for Plaintiff Michael T. Imms, Esq.

Court of Common Pleas of Erie County, Erie PA

5/23/01 Barry vs. Hamot Medical Center Attorney for Defense: Francis J. Klemensic, Esquire

Court of Common Pleas, Montgomery County, OH

10/6/01 Rochelle E. Weiss v. Good Samaritan Hospital 00-CV-5894 Attorneys for Plaintiff Thomas Replogle, Esq.

Cleveland, Ohio

3/16/05 James Whitley Sr. v. Senior Group Home, et.al. Attorney for Plaintiff: Hans C. Kuenzi, Esq.

Court of Common Pleas, Friendswood, TX

2/8/01 Beverly Taylor v. Stefek and Carley Attorney for Plaintiff Alton Todd, Esq.

Circuit Court for the County of Washtenau, Michigan

Joseph Hartsig v. Chelsea Community Hospital and Figueroa 2000-1392-NH Attorney for Plaintiff Nancy Savageu, Esq.

Circuit Court for the Oakland County, Michigan

11/17/03 Ariel Perez v. Oakland County, et al. Attorney for Defense: Steven N. Potter, Esq.

United States District Court For The District of New Jersey, NJ

4/25/00	Sharon Kolnhofer v. J.B Transport Inc.	99-CV-4210	Attorney for Defense Mark J. Potel, Esq.
9/20/00	Cynthia Savaiko v. Comp USA Inc.	99-CV-2302	Attorney for Defense Miranda Mitchell, Esq.

4/6/01 Debbie L. Murphy and Paul Lasky v. North Star Transport, Inc 1: 00cv04150 Attorney for Defense Sean Lipski, Esq.
12/19/02 Gina G. Pin v. Interstate Industrial Corp. and Alan Shawartz 01-CV-2721 Attorney for Plaintiff Stephen F. Brock, Esq.

Montgomery County Court of Common Pleas, Montgomery County, PA

8/25/00 Nicholas Martino v. Maggio's Inc. 99-03674 Attorney for Plaintiff: Samuel Merovitz
6/10/03 McConnell v. Genuardi's Family Market, et al Attorney for Defense: Daniel Rucket, Esq.
6/1/04 Estate of Donald Qualls, M.D. Attorney for Plaintiff: Mark Hodgeman, Esq
3/9/05 Sharon Bell v. Bennie Bell and Tyrone Norris Attorney for Defense: Michael Cassidy, Esq.
4/29/13 Commonwealth of PA v. Adam Schwager CP-46-CR-669-2012 Attorney for Defense Ward A. Cotton, Esq.

Philadelphia County Court of Common Pleas, Philadelphia, PA

1998 – 2000 Supervised or Performed hundreds of Competency to Stand Trial Evaluations at Philadelphia Prison System.

9/12/00 Commonwealth of Pennsylvania v. Rangel Vangas Attorney for Defense: Michael Parlow, Esq.
4/5/01 Maria Ortiz and Raul Ortiz v. Temple University Hospital Attorney for Plaintiff: Rosemary Pinto, Esq.
9/22/01 Scott Corbman v. Unum Provident Attorney for Defense: Andrew Sasko, Esq.
11/23/02 Campbell v. Attanasio Attorney for Plaintiff: Steven Friedman, Esq.
6/10/03 Verditta McFadden vs. Murry's Inc. d/b/a Murry's Steaks, Inc. and Murry's Steaks c/o CT Corporation System
Attorney for Defense: Michael P.Gould, Esq.
6/10/03 Karen Scott vs. Murry's Inc. d/b/a Murry's Steaks, Inc. and Murry's Steaks c/o CT Corporation System
Attorney for Defense: Michael P.Gould, Esq.
7/703 Caffee v. Chestnut Hill Hospital, et al Attorney for Plaintiff: Mikel Jones, Esq.
11/17/03 Donald Levy v. E. Allen Reeves, Inc. and White Horse Village, Inc. Attorney for Defense: Fred B. Buck, Esq.
1/28/04 Commonwealth of Pennsylvania v. Allen Gore Attorney for Defense: James N. Gross, Esq.
5/10/04 Alan Webb v. K.P. Hotel Partners, et al Attorney for Defense: Sandra L. Jacques, Esq.
2/26/05 Joseph Guinter v. Sunrise Concrete 200005282-23-2 Attorney for Defense: Sharon Harvey, Esq.
8/1/05 Colter v. Temple University et. al. Attorney for Defense: Lucia Morrone, Esq.
5/4/09 State v. Yu Ting Yang Attorney for Defense: Justin Swindler, Esq.
11/1/10 Byron Azarm v. Uptown Plumbing and Heating Attorney for Defense: Donna Crothamel, Esq.
3/7/11 Ortiz v. Delaware Port Authority U.S.D.C. E.D. Pa. 09-CV-06062-RB Attorney for Defense: Daniel Rucket
7/14/11 Abolafia v. Fireman's Fund Attorney for Defense: Steven Eichcler, Esq.
11/14/11 Craig v. Wawa, 451378 Attorney for Defense: Heather Herrington, Esq.
3/22/13 Vonique Sanders v. Abuco, Inc. d/b/a Underground Market, et al. Attorney for Defense David DuBois, Esq.

Philadelphia County Orphans' Court, Philadelphia, PA

12/27/01 Re: Estate of Veronica McQuilkin Attorney for Defense: Richard Costigan, Esq.
9/21/04 Re: Estate of Robert N.C. Nix Attorney for Plaintiff: Richard Costigan, Esq.
7/5/07 Re: Estate of David Fogel Attorney for Defense: Kevin B. Quinn, Esquire
11/18/09 Re: Estate of Hilda Hession Attorney for Plaintiff: Ryan D. Harmon, Esq.

Franklin County, PA

12/5/08 Commonwealth vs. Helen Louise Gordon Attorney for Prosecution:Jeremiah D. Zook, Esq.
3/18/13 Commonwealth of PA vs. Daniel Crutchfield Attorney for Prosecution:Gerard N. Mangieri, Esq.

US District Court for the Northern District of Ohio, Western Division

7/31/02 Anita Carion /Robert Perez Jr. v. LoCastro & Associates, Inc., et al. Attorney for Defense: Denise M. Hasbrook, Esq.

US District Court, Washigton D.C.

4/19/05 Guy N. Thomas v. Alberto Gonzales, US Attorney General CA-04-1061 (PLF) Attorney for Defense: Beverly M. Russell, Esq.

Court of Common Pleas, North Hampton County, PA

6/5/03 Ferraro v. Bell et al Attorney for Plaintiff: Charles Haros, Esq.

Court of Common Pleas, Chambersburg, PA

9/12/03 Cutright v. Cutright Attorney: Karen Semmelman, Esq.

7/27/04 Garner v. Garner		Attorney: Karen Semmelman, Esq.

Court of Common Pleas Holyoke, Massachusetts

7/22/03 Re: Estate of Michael Kizior		Attorney for Defense: Charles F. Smith, Esq.

Bucks County Court of Common Pleas, PA

3/8/04 Commonwealth of Pennsylvania v. Lungin		Attorney for Defense: Christopher E. Mannix, Esq.
7/11/05 Daniel Cramigna v. Lower Bucks Hospital		Attorney for Plaintiff: Christopher Moyer, Esq.
10/20/06 Commonwealth of Pennsylvania v. Robert Flor		Attorney for Defense: Bradley Bastedo, Esq.
5/27/07 Commonwealth of Pennsylvania v. Ghania Taos Warburton		Attorney for Defense: Lisa Y. Williams, Esquire

Bucks County Orphans Court

Estate of Josephine Ference	2008-0023-29	Attorney for Plaintiff: Daniel S. Wassmer, Esq.

Delaware County Court of Common Pleas, Media, PA

8/16/00 Commonwealth of PA v. John Redfern		Hon. Judge George Koudelis Hon. Judge Kenneth A. Clouse
3/6/02 Re: Estate and Guardianship of Margaret Bien	832-2001	Attorney: F. Michael Friedman, Esq.
7/10/02 Re: Estate and Guardianship of Bruce Jorgensen	377-2902	Attorney: F. Michael Friedman, Esq.
11/12/02 Re: Estate and Guardianship of Dorothy D. Magee	322-2002	Attorney: F. Michael Friedman, Esq.
11/25/02 Re: Estate and Guardianship of Dorothy Young	658-2002	Attorney: F. Michael Friedman, Esq.
2/3/03 Re: Estate and Gardianship of Joseph A. Ferrigno	231-2002	Attorney: Mark L. Tunnell, Esq.
2/3/03 Re: Estate and Gardianship of Joseph A. Ferrigno, Jr.	232-2002	Attorney: Mark L. Tunnell, Esq.
3/10/03 Re: Estate and Guardianship of Veronica Burchikas	793-2003	Attorney: F. Michael Friedman, Esq.
3/21/03 Re: Estate and Guardianship of Edna Brady	56-2003	Attorney: F. Michael Friedman, Esq.
3/26/03 Robert H. Dennis v. Elizabeth Cave	142-03	Attorney: F. Michael Friedman, Esq.
7/10/03 Re: Estate and Guardianship of Helen Longworth	88-2003	Attorney: F. Michael Friedman, Esq.
9/03/03 Re: Estate and Guardianship of James Lerums	594 -2003	Attorney: F. Michael Friedman, Esq.
1/19/04 Re: Estate and Guardianship of Thelma Hannold	708-2003	Attorney: F. Michael Friedman, Esq.
2/22/04 Re: Estate and Guardianship of Patrick McGrath		Attorney: F. Michael Friedman, Esq.
7/16/04 Re: Estate and Guardianship of Carol Stewart	271-2004	Attorney: F. Michael Friedman, Esq.
8/25/04 Re: Estate and Guardianship of Erica Glanzmann	333-2004	Attorney: F. Michael Friedman, Esq.
9/7/04 Re: Estate and Guardianship of Violet Duke	04-246	Attorney: F. Michael Friedman, Esq.
4/2/05 Re: Estate and Guardianship of Frederick Kempin	73-2005	Attorney: F. Michael Friedman, Esq.
4/18/05 Re: Estate and Guardianship of William F. Barrett	53-2005	Attorney: Dolores Troiani, Esq.
6/25/05 Re: Estate and Guardianship of Rose E. Greco	682-2004	Attorney: F. Michael Friedman, Esq.
12/1/05 Re: Estate and Guardianship of Dorothy Morrison	625-2005	Attorney: F. Michael Friedman, Esq.
12/3/05 Re: Estate and Guardianship of Neva F. Oeschger	685-2005	Attorney: F. Michael Friedman, Esq.
12/9/05 Re: Estate and Guardianship of Philip Kloss	694-2005	Attorney: F. Michael Friedman, Esq.
4/26/06 Re: Estate and Guardianship of Anthony Celona	381-1996	Attorney: F. Michael Friedman, Esq.
8/31/06 Re: Estate and Guardianship of Anne M. Giesler	506-2006	Attorney: F. Michael Friedman, Esq.
9/6/06 Re: Estate and Guardianship of Phyllis D. Adams	446-2006	Attorney: F. Michael Friedman, Esq.
9/25/06 Re: Estate and Guardianship of James O'Hanlon	477-2006	Attorney: F. Michael Friedman, Esq.
1/22/07 Re: Estate and Guardianship of Lisa Rubin	506-1990	Attorney: F. Michael Friedman, Esq.
2/14/08 Re: Estate and Guardiansip of Neva Oeschger	685-2005	Attorney: F. Michael Friedman, Esq.

Lycoming County Court of Common Pleas

8/30/01 Commonwealth of Pennsylvania v. Brian Yassipour	01-11465	Attorney for Defense: Nicole Spring, Esq.
2/7/02 Commonwealth of Pennsylvania v. Susan Griffin	01-10604	Attorney for Defense: William J. Miele Esq.
2/8/02 Commonwealth of Pennsylvania v. Donald Brow		Attorney for Defense: William J. Miele Esq.
2/22/07 Commonwealth of Pennsylvania vs. Kyion Ball;	CR. 834-2006	Attorney for Defense: Nicole Spring, Esq.
3/23/07 Commonwealth of Pennsylvania vs. Jonathan Mitchell		Attorney for Defense: William J. Miele Esq.
6/22/15 Commonwealth of Pennsylvania vs. Michael Wright		Attorney for Defense: William J. Miele Esq.
9/10/15 Commonwealth of Pennsylvania vs. Hassan Gooden-Reid		Attorney for Defense: William J. Miele Esq.

Gloucester County, NJ
4/19/10 State of New Jersey v. Kathleen Sigel — Prosecutor Staci Scheetz, Esq.
8/18/10 State of New Jersey v. Donald Hetrick — Prosecutor Dana Anton, Esq.
9/21/10 State of New Jersey v. Martina Harding — Prosecutor Mary Pyffer, Esq.
1/17/12 State of New Jersey v. Brandon Prosser — Prosecutor Temperance Williamson, Esq.
1/9/14 In the Matter of Evelyn Worley — Attorney for plaintiff Dan Parenti, Esq

Roseland, NJ
11/27/12`Selle v Selle — Attorney for Defense Mark Winter, Esq

Circuit Court of The Sixth Judicial, Pasco County, Florida
6/3/02 Koskosky / Spegon v. Harbor — Attorney for Defense: Mindy P. Robbins, Esq.

Orange County, Florida
Ron Glover v. Orange County — Attorney for Plaintiff: E. Clay Parker, Esq

Court of Common Pleas, Morgantown, West Virginia
11/6/02 Reginald Riley v.Wilbur Z. Sine, et al. 02-C-139 — Attorneys for Plaintiff: Thorn Thorn, Esq. and James Flanigan, Esq.

Superior Court of the State of Alaska, Anchorage
11/21/02 In the Matter of Robert Byrd — Attorney for Defense: James Wendt, Esq.

Superior Court of the State of Alaska, Fairbanks
4/3/03 Greywolf v. Carroll/City Fairbanks 4FA-S01-2916-CIV — Attorney for Plaintiff: James M. Hackett, Esq.

Superior Court of New Jersey. Law Division - Criminal, Atlantic County, NJ
3/3/03 State of New Jersey v. Lee Amberths 02001741 — Attorney for Prosecution: Linda Lawhun, Esq.

Totowa, New Jersey
3/14/05 Favatella v. Dish Network AAA Claim No. 18 160 08393 04 — Attorney for Defense: Caroline Berdzick, Esq

US District Court, Sussex County, Delaware
8/20/03 Burton P. Walius v.Sheila J. Stevens — Attorney for Plaintiff: John A. Sergovic, Jr., Esq.

US District Court for the Southern District of New York. NY NY
1/7/04 Hickey vs. City of New York, et al. — Attorney for Plaintiff: Daniel Cherner, Esq

Ashe County Court of Common Pleas, Jefferson, N.C.
6/23/04 Will of Fielding V. Miller, deceased 01-E-217 — Attorney for Plaintiff: E.K. Morley, Esq

Superior Court of New Jersey, Hudson County, NJ
9/2/03 The Trust Company of New Jersey v. Viola Contracting Co,. Inc. — Attorney for Defense: Paul Alongy, Esq.

2002 – 2006 Over two hundred evaluations of Sexual Offender Cases as a Consultant / Department of Human Services, NJ

Baltimore, Maryland
2/7/05 James Huddleston v. Prison Health Services, Inc. — Attorney for Plaintiff Thomas O'Toole, Esq.

Galveston, Texas
Dominic Joseph v. University of Texas Medical Branch — Attorney for Defense: Elizabeth Camp-Hoffman, Esq

Stamford, Connecticut
11/17/07 Estate of Marilyn Lois Wagner, Deceased — Attorney for Defense Kurosh L. Marjani, Esq.

Bridgeport, Connecticut

6/4/13 Vechiola v. Fasanella FBT-CV-10-5029378 — Attorney for Defense Thomas Weihging, Esq.

Gulfport, Mississippi
5/24/05 State of Mississipi v. Justin "Drew" Brown — Attorney for Defense: Joe Sam Owen, Esq.

Kitsap County, Washington
7/11/05 State of Washington v. Wayne Hower — Attorneys for Defense: David Lacross, Esq. and John O'Melveny, Esq.

Visalia, California
7/18/05 Harris v. State of California — Attorney for Defense: Melvin Barney, Esq.

New Orleans, Louisiana
Estate fo Eugene Bernard Stamm — Attorney: Samantha Griffin, Esq.

Camden County, New Jersey
6/8/09 Dennis Wiggins et al. v. Borough of Clementon et al. — Attorney for Plaintiff: Justin Swindler, Esq.
10/27/09 Agnes Walls v. The County of Camden — Howard L. Goldberg, Esq./Office of County Counsel
7/22/11 State v. Binh Thach — Attorney for Prosecution: Teresa Garvey, Esq.
7/17/12 State v. Irvin Frazier — Attorney for Prosecution: Natalie Schmid Drummond, Esq

United States District Court For The Eastern District of Pennsylvania. Allentown, PA
4/13/09 US v. Tommy Meeks — Attorney for Defense: Kyle Rude, Esq.

Miami-Florida
1/27/09 Marish v. University Hospital and Medical Center — Attorney for Defense: Eugene K. Pettis, Esq.

Birmingham, Alabama
8/10/09: State v. Vikentiy Karpechin — Attorney for Defense: Derek Drennan, Esq.

United States District Court, District of Delaware, Wilmington, DE

9/29/09	United States v. Gary Johnson	09-02-GMS	Attorney for Defense: Edson Bostic, Esq.
12/19/09	United States v. Marty Eaton	06-50-GMS	Attorney for Defense: Luis A. Ortiz, Esq.
12/8/11	United States v. Carolyn Wall	11-46-GMS	Attorney for Defense: Keir Bradford, Esq.
7/28/14	United States v. Charles Jobe14-85M	14-85M	Attorney for Defense: Eleni Kousolis, Esq.

22nd Judicial District Court, St. Tammany, Louisiana
9/21/10 Goff et al v. Richard Donovan — 03-12587 — Attorney for Plaintiff: Thomas Calvert, Esq.

Southern District of Charleston, W. Virginia
Cantley v. WVRJA — 3:09-cv-00758 — Attorney for Defense: Joshua Boggs, Esq.

Allegheny County, PA
4/22/10 Schmidt et al v. Carosella et. al. — GD-08-000338 — Attorney for Plaintiff: Monte Rabner, Esq.

Shawnee County, Kansas
5/24/11 Estate of Donald Hinshaw — 10 P 373 — Attorney for Plaintiff: Elizabeth Harris, Esq.

Lehigh County PA
6/20/11 Bidell v White Deer Run, Inc. et. al. — 2010-C-2257 — Attorney for Defense: Daniel Rucket, Esq.
6/20/11 Davis v. White Deer Run, Inc., et al. — 2010-C-2255 — Attorney for Defense: Daniel Rucket, Esq.

United States District Court For The Eastern District of Pennsylvania. Philadelphia, PA
11/29/99 Eric Stuart v. Bally Total Fitness; — 99-CV-3555 — Hon. Judge Ludwig
Attorneys for Plaintiff Warren A. Hampton, Esq. and Matthew Wolf, Esq.

5/5/99	United States v. Fernando Screnci	99-388-M	Hon. Judge Leomporra
5/10/99	United States v. Arthur L. Sachs	99-350-M-1	Hon. Judge Faith Angell
5/26/99	United States v. Lee M. Hales	99-358-M	Hon. Judge Hart
6/4/99	United States v. Frank Anderson	99-434-M	Hon. Judge Welsh
7/21/99	United States v. James C. Hawkins	99-633-M	Hon. Judge Faith Angell
7/26/99	United States v. S. M. Heidnik	99-577-M	Hon. Judge Melinson
7/29/99	United States v. Lena Lambright	99-50	Hon. Judge Joyner
8/19/99	United States v. Maurice Smith	99-109-01	Hon. Judge DuBois
9/9/99	United States v. Antonio DeSimone	99-524-11	Hon. Judge Smith
9/14/99	United States v. James Allen Jones	99-175-2	Hon. Judge Brody
9/21/99	United States v. John Brian Miller	99-810-M	Hon. Judge Welsh
9/30/99	United States v. Robert A. Peppi, Jr.	99-835-M	Hon. Judge Wells
10/20/99	United States v. Edward Brown	99-438	Hon. Judge Scuderi
9/9/99	United States v. Michael Porter	99-00442	Hon. Judge Ludwig
11/3/99	United States v. David Johnson	99-693	Hon. Judge Melinson
11/3/99	United States v. Darren Sullivan	99-946-M	Hon. Judge Wells
11/5/99	United States v. Frances DeGideo	99-954-M	Hon. Judge Wells
11/8/99	United States v. Patricia McGrath	99-554	Hon. Judge DuBois
10/27/99	United States v. Walter Adamczyk	97-1005-M	Hon. Judge Melinson
11/19/99	United States v. Catherine Ross	99-711-9	Hon. Judge Rueter
11/29/99	United States v. Jomandii Schocar	99-1003-M	Hon. Judge Faith Angell
12/3/99	United States v. John Brian Miller	99-810-M	Hon. Judge Giles
12/9/99	United States v. Timothy Johnson	99-1041	Hon. Judge Hart
12/12/99	United States v. Everett Wilson	99-1025-M	Hon. Judge Rappaport
12/12/99	United States v. J. Washington	00-0008	Hon. Judge Rueter
12/20/99	United States v. D. L. Washington	99-1069-74	Hon. Judge Melinson
1/28/00	United States v. Robert Weber	00-052-M	Hon. Judge Wells
2/8/00	United States v. George B. Knight	00-84-M-1	Hon. Judge Smith
2/16/00	United States v. James Morrow	99-711-12	Hon. Judge Kauffman
2/24/00	United States v. James Matos	00-120-M	Hon. Judge. Faith Angell
3/07/00	United States v. Virginia Olmo	00-159-M-02	Hon. Judge Rueter
3/29/00	United States v. Wade Friday	98-00642-1	Hon. Judge Ludwig
4/05/00	United States v. Maurice Treadwell	00-261-M-1	Hon. Judge Scuderi
4/11/00	United States v.Troy Palmer	99-1008-M-01	Hon. Judge Melinson
4/7/00	United States v. Dante Bell	00-261-M-2	Hon. Judge Scuderi
4/27/00	United States v. Frank Thomas	99-525-20	Hon. Judge Smith
5/05/00	United States v. Mark Goodwin	99-003-3	Hon. Judge Buckwalter
5/18/00	United States v. Monica Vincent	00-161-3	Hon. Judge Faith Angell
5/16/00	United States v. Richard E. Lehner	00-409-M	Hon. Judge Wells
6/19/00	United States v. Ann Marie Hogan	98-376-32	Hon. Judge Dalzell
8/04/00	United States v. Louis Lindsay	00-403-1	Hon. Judge Scuderi
8/21/00	United States v. Alexander Jones	99-1003-M	Hon. Judge Faith Angell
8/21/00	United States v. Gregory Cowan	00-645-M	Hon. Judge Smith
9/28/00	United States v. Carlos L. Johnson	00-743-M	Hon. Judge Reuter
10/06/00	United States v. Rindy Lee Martin	00-686-M	Hon. Judge Wells
10/27/00	United States v. James Rufus McCoy	00-335-M	Hon. Judge Dalzell
1/12/00	United States v. Cora Love	92-504-16	Hon. Judge Giles
11/17/00	United States v. Daniel Piotek	00-932-M	Hon. Judge Scuderi
11/21/00	United States v. Joseph P. DeNardo	00-424-M	Hon. Judge Hutton
11/22/00	United States v. Robert M. Brown	00-952-M	Hon. Judge Melinson
12/08/00	United States v. Arthur Ferguson	00-705	Hon. Judge Smith
12/18/00	United States v. John McClure	00-998-M-01	Hon. Judge Welsh
12/18/00	United States v. Theodore Boyd	00-1024-M	Hon. Judge Welsh
1/11/01	United States v. Sung Oh	01-25-M-1	Hon. Judge Smith
1/12/01	United States v. Lee A. Bobo	00-1022-M	Hon. Judge Caracappa

1/25/01	United States v. Javier Marrero	01-32-3	Hon. Judge Melinson
2/23/01	United States v. Carl Robinson	00-135-M	Hon. Judge Welsh
2/26/01	United States v. Thomas Johnson	00-351-3	Hon. Judge Dalzell
2/26/01	United States v. Daniel Piotek	01-56-1	Hon. Judge Wells
3/20/01	United States v. Andre White	01-220-M	Hon. Judge Melinson
4/06/01	United States v. Ricardo Athy	00-283-M	Hon. Judge Welsh
4/06/01	United States v. Mitchell Guilliatt	00-289-M	Hon. Judge Welsh
4/11/01	United States v. James R. McCoy	00-335-	Hon. Judge Dalzell
4/24/01	United States v. Lewis McDaniel	00-479-1	Hon. Judge Padova
4/30/01	United States v. Steven A. McIntyre	01-369-M	Hon. Judge Wells
5/3/01	United States v. Aaron Holmes	V317706-PET	Hon. Judge Wells
6/14/01	United States v. James A. Craft	01-119-M	Hon. Judge Smith
10/15/01	United States v. Pamela Superville	00-758-01	Hon. Judge Kauffman
10/18/01	United States v. Angel Rodrigues	00-386	Hon. Judge Kelly
10/22/01	United States v. Raul Lopez	00-741	Hon. Judge Schiller
10/22/01	United States v. Michael Brewer	00-79-3	Hon. Judge Joyner
10/29/01	United States v. Robert Gibson	00-842-M	Hon. Judge Wells
10/29/01	United States v. Alfred Sheppard	00-840-M	Hon. Judge Wells
10/30/01	United States v. Karol Kavalec	01-62-3	Hon. Judge Tucker
11/8/01	United States v. Daniel DeAngelo	01-861-M	Hon. Judge Hart
11/13/01	United States v. William J. Allen	01-829-M	Hon. Judge Hart
11/20/01	United States v. Q. Andrews	01-609-1	Hon. Judge Giles
12/5/01	United States v. Erick Howze	01-252	Hon. Judge Smith
12/11/01	United States v. Harriett Jaffee	01-959	Hon. Judge Smith
1/8/02	United States v. James Balla	01-493	Hon. Judge Padova
1/28/02	United States v. Michael Grasso	00-CR-051	Hon. Judge Kauffman
2/4/02	United States v. James Vandergrift	01-752-01	Hon. Judge DuBois
2/15/02	United States v. Carl Williams	98-1042-M	Hon. Judge Angell
2/18/02	United States v. a. Stone-Renez	101-M-2	Hon. Judge Welsh
2/28/02	United States v. Henry D. Buss	01-883-M	Hon. Judge Angell
3/6/02	United States v. Kevin Farrington	02-102-M	Hon. Judge Rapoport
3/11/02	United States v. Juana Resio	02-154-M-02	Hon. Judge Caracappa
3/11/02	United States v. Anthony Lockhart	02-69-01	Hon. Judge Tucker
3/19/02	United States v. Michael Meyers	00-548-02	Hon. Judge Welsh
3/22/02	United States v. Denise Bove	02-232-M	Hon. Judge Angell
3/22/02	United States v. William Alexander	02-149	Hon. Judge Angell
4/4/02	United States v. Kenneth Harris	02-46-M	Hon. Judge Smith
5/10/02	United States v. Samuel Aviles	01-231-19	Hon. Judge Dalzell
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5/21/02	United States v. Preston Lit	02-410-07	Hon. Judge Melinson
5/23/02	United States v. Henry Dohling	02-381-M	Hon. Judge Smith
6/10/02	United States v. Maurice Smith	99-109-M	Hon. Judge Dubois
7/19/02	United States v. Ronald Rines	01-CR-228	Hon. Judge Rufe
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9/27/02	United States v Earnest Soda	02-46-1	Hon. Judge Caracappa
9/30/02	United States v. Gregory Skipper	02-394-10	Hon. Judge Angell
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1/17/03	United States v. Andrew Shepard	02-536	Hon. Judge DuBois
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2/18/03	United States v. Charles Campa	03-71	Hon. Judge Smith
3/14/03	United States v. Tyrone Staples	02-567-01	Hon. Judge Kauffman
3/24/03	United States v. Anthony Mitchell	02-420-1	Hon. Judge Waldman
3/25/03	United States v. Anthony Reid	03-212-M	Hon. Judge Angell
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5/18/03	United States v. Dario Rodriquez	02-CR-552011	Hon. Judge Kufe
5/22/03	United States v. Oral Allen	03-431-M	Hon. Judge Melinson
5/26/03	United States v. Amin Rose	03-270	Hon. Judge Melinson
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6/23/03	United States v. Cortney Morrow	03-361-01	Hon. Judge Welsh
7/3/03	United States v. Harold Rodney	02-572-M	Hon. Judge Padova
7/9/03	United States v. Cassimiro Zorrilla	02-631-M-2	Hon. Judge Caracappa
7/14/03	United States v. John White	03-557-M-1	Hon. Judge Rapoport
7/21/03	United States v. Kenneth Williams	02-491-01	Hon. Judge Rufe
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1/15/04	United States v. Jesse Gastelum	2003-8-3	Hon. Judge Brody
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3/7/05	United States v. Michael Lucidonio	05-20-01	Hon. Judge Rueter
3/8/05	United States v. Michael Mirakian	04-808-1	Hon. Judge Wells
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3/21/05	United States v. Craig Green	04-583	Hon. Judge Davis
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6/5/05	United States v. Harold Rodney	02-445	Hon. Judge Padova
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6/12/05	United States v. Paul Coyle	05-568-M	Hon. Judge Angell
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8/15/05	United States v. Gregory Gordon	03-0002-M	Hon. Judge Surrick
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12/20/05	United States v. James Lasane	05-1002-M	Hon. Judge Rice
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6/1/06	United States v. James Godwin	06-CR-62-1	Hon. Judge Rufe
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6/18/07	United States v. Darryl Murray	07-338m	Hon. Judge Dalzell
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11/14/07	United States v. Leo Dennis	07-1336-M	Hon. Judge Rice
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8/8/08	United States v. Omaru Sannoh	07-790-03	Hon. Judge Strawbridge
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5/10/10	United States v. Abdul English	10-688-M	Hon. Judge Srawbridge
5/13/10	United States v. Michael Moore	10-289-01	Hon. Judge Restrepo
5/19/10	United States v. Donato Rodriguez	09-614-1	Hon. Judge Tucker
6/1/10	United States v. Shirley McKeithan	09-1609-M	Hon. Judge Wells
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5/6/11	United States v. C. Aguilar-Florez	11-121	Hon. Judge Tucker
6/14/11	United States v. John Gassew	2010-45-1	Hon. Judge Brody
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9/6/11	United States v. Paul Sewell	10-731-01	Hon. Judge Jones
9/22/11	United States v. Jerome Edwards	03-539	Hon. Judge Reuter
9/30/11	United States v. Ruby Marconi	11-341-M	Hon. Judge Wells
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1/30/12	United States v. Jay Allen Fisher	10-CR-331	Hon. Judge Jones
3/17/12	United States v. David Charles Evans	12-410-M	Hon. Judge Caracappa
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5/23/12	United States v. John Grzyminski	12-730-M	Hon. Judge Hart
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7/9/12	United States v. S. Northington	07-550-5	Hon. Judge Surrick
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8/7/14	United States v. Brian Welsh	13-642	Hon. Judge Quinones
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11/28/14	United States v. Taltoan Marquis	14-1176-M	Hon. Judge Reuter
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4/10/15	United States v.Kyle Costello	14-107-01	Hon. Judge Stengel
5/9/15	United States v.Aileen Gong	14-522-1	Hon. Judge Davis
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6/11/15	United States v.Ramos Pacheco	14-586	Hon. Judge Smith
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7/1/15	United States v.Dorothy June Brown	12-0367-01	Hon. Judge Surrick
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7/13/15	United States v. Joseph Torrence	15-538-1	Hon. Judge Perkin
1/7/16	United States v. Mark Postell	15-481-1	Hon. Judge Wells
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5/2/16	United States v. Ellwood Quillen	2:16-cr-161	Hon. Judge Caracappa
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8/3/16	United States v. Brian Shields	16-942-1-M	Hon. Judge Heffley
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12/14/16	United States v. John McKoy	11-214	Hon. Judge Davis
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2/17/17	United States v. Brandon Mayes	15-376-10	Hon. Judge Pratter
3/5/17	United States v. Reginald Copper	17-71-11	Hon. Judge Hey
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4/3/17	United States v. Donald Willie	16-1491	Hon. Judge Baylson
4/3/17	United States v. Reginald Copper	17-71-11	Hon. Judge Sitarski
7/8/17	United States v. Ning Jian Du	17-CR284-6	Hon. Judge Reuter
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8/16/17	United States v. Marco Burton	17-CR-409	Hon. Judge Lloret

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4/12/18	United States v. Gene Wilson	2:17-CR-00072	Hon. Judge Diamond
4/27/18	United States v. Antonio Shaw	2:18-cr-00147	Hon. Judge Rice
5/12/18	United States v. Dottie Good	17-72-07	Hon. Judge Diamond
5/18/18	United States v. Jose Echevarria	18-146	Hon. Judge Sitarski
7/30/18	United States v. Reese Ronald	18-39	Hon. Judge Kearney
10/2/18	United States v. Terence Gale	18-330	Hon. Judge Diamond
10/2/18	United States v. Jermau Johnston	13-171-4	Hon. Judge Hey
10/23/18	United States v. Myron S. James	18-1651-M	Hon. Judge Wells
11/3/18	United States v. Myron S. James	18-1651-M	Hon. Judge Wells
12/10/18	United States v. Collin Cowell	16-498-1	Hon. Judge Joyner
1/8/19	United States v. Daquian Brown	17-71-10	Hon. Judge Diamond
1/11/19	United States v. Reinhard III, L	18-581	Hon. Judge Hart
1/14/19	United States v. Harvey M. Shaner	18-56	Hon. Judge Smith
2/18/19	United States v. Donald L. Miller	18-400	Hon. Judge Smith

As a Consultant, Department of Human Services, State of New Jersey:
Over five hundred evaluations and consultations on sexual offender cases

Consultant, State of Pennsylvania Bureau of Professional and Occupational Affairs:
Services contracted for assessments of Fitness for Duty of licensed health professionals: physicians, nurses, pharmacists, and other.
Performed over fifty evaluations

Over two hundred Independent Medical Evaluations for Assessment of Disability: for plaintiff, defense, and evaluations for UNUM Provident, Lincoln National Insurance Company, Prudential, Network Medical Review, Integral, Comprehensive Health Services, Workers' Compensation, and Social Security Administration

Review of over two hundred malpractice cases

PERSONAL DATA: Place of birth: Yerevan, Armenia (former USSR), Date of birth: Dec. 5, 1956. Citizenship: USA
Marital Status: Married: Nov. 17th, 1982, Two Children

FOREIGN LANGUAGES: Fluent in Armenian and Russian

References available upon request

Pogos H. Voskanian, M.D. / List of cases where testimony or deposition was required:

2/5/21
Succession of John B. Bobear, M.D.
New Orleans, LA
Attorney for Plaintiff – John O'Bell, Esq

10/22/19
KROL hearing
Prosecuting attorney – Renee White, Esq
Toms River, NJ

9/25/19
Crawford v Corizon
Pittsburgh, PA
Attorney for Plaintiff – Timothy Kolman, Esq

6/24/19
Sterlin Reaves v. John Wetzel et al
Pittsburgh, PA
Defense Attorney – Bradley Scott, Esq

3/13/19
State of New Jersey v Arthur Haskoor
Ocean County, NJ
Prosecuting Attorney – Michelle Armstrong, Esq

3/4/19
State of Pennsylvania v Eric King
Harrisburg, PA
Defense Attorney – Mary Klatt, Esq

1/25/19
Allen Gore v Superintendent Vuksta
Federal Court, ED PA
Federal Defender: Joel Mandelman, Esq

6/27/18
Pedro Cartagena v Service Source
Harrisburg, PA
Plaintiff Attorney: Timothy Seiler, Esq.

9/22/17
Wickward v. J&S Precision Products Co
Burlington County, NJ
Plaintiff's Attorney: Alan Schorr

2/6/17
US v David Luce
Federal Court, ED PA
Judge: Elizabeth T. Hey

1/18/2017

Jane Doe v Tania Giddings
Wilmington, Delaware
Attorney for Defense: Michael F. McTaggart, Esq

8/24/16
Vallina v. Teller County
Attorney for Plaintiff: Heather Mitchell, Esq.
USDC - Colorado

8/11/16
Arthur Johnson v Commonwealth of PA
Attorney for Defense: Karen Romano
Harrisburg, PA

6/14/16
State of WV v Donald Sidney Bailey
Attorney for Defense: Lacy Wright
Welch, West Virginia

3/18/16
State of New Jersey v. Stefan Curry-Beckett
Prosecuting Attorney: Peter Crawford
Camden, New Jersey

10/13/15
Commonwealth of PA v Michelle Hunter
Attorney for defense: Matt Sembach
Franklin County, PA

8/25/15
Commonwealth of PA v. Michael Wright
Attorneys for Defense: William Mealy, Esq. and Nicole Spring, Esq.
Lycoming County, PA

3/30/15
In the Matter of Evelyn Worley
Gloucester County, NJ
Attorney: Dan Parenti

1/29/15
US v. Dorothy June Brown
Federal Court, ED PA
Judge: Barclay Surrick

12/8/14
Medina v. Arizona
Attorney for Defense: Scott Zerlott

8/9/14
Estate of Matthew Hamilton v PrimeCare Medical Inc.
Court of Common Pleas, Lawrence County, PA

Attorney for Plaintiff Gianni Floro

5/27/14
Robert Flor v. Commonwealth of Pennsylvania
Attorney for Defense: Peter Williams, Esq.
Bucks County, PA

7/29/13
Cantley et al v. West Virginia Regional Jail, et al
US District Court, SD West Virginia
Defense attorney - David Mincer, Esq.

7/16/13
US v Ismael Lopez
Federal Court, ED PA
Attorney Richard Llloret, AUSA

6/4/13
Vechiola v. Fasanella
Bridgeport, CT
Attorney Thomas Weighing

5/3/13
State v. Binh Thach (PCR)
Camden County, NJ
Attorney for State – David Dietz

12/13/12
Selle v Selle
Roseland, NJ
Atty: Mark Winter

8/6/12
State v. Irvin Frazier (PCR)
Camden County, NJ
Attorney for State – Natalie A. Schmid Drummond

9/13/11
Estate of Donald Hinshaw
Topeka, Kansas
Elizabeth Harris

2/8/11
State of New Jersey v. Donald Hatrick
Gloucester County, New Jersey
Dana Anton
Competency/Insanity Defense

8/24/10
Talmadge v. Sonders

Phoenix, Arizona
Gary Fadell

7/13/10
Estate of Hession
Ryan Harmon, Esq
Philadelphia, PA

4/27/10
Estate of Ference
Daniel Wassmer, Esq
Bucks County, PA

1/28/10
Burnett v. US
Federal Court, ED PA
Christopher Furlong, Esq

5/14/09
Wagner v. Good Samaritan Hospital
Rockland County, New York
Michael O'Donnell

4/30/09
Estate of Luis Haff
West Chester, PA
Mark Tunnell

1/27/09
Marish v Uinv. Hospital
Florida
Miller

7/7/08
Estate of Eugene Stamm
New Orleans, LA
Samantha Griffin

6/28/08
Fed. Court, Eastern PA
John Herron
Judge Savage

4/8/08
Estate of Wagner
Kourosh Marjani
Stamford, Connecticut

3/11/08
RE: Michelle Harnish
Commonwealth of Pennsylvania

Anita Shekletski
Harrisburg, PA

6/13/07
Huddleston et. al. v. Prison Health Services
Attorney for Plaintiff: Thomas O'Toole, Esq.
Baltimore, Maryland

6/11/07
RE: Patrick Chang
Commonwealth of Pennsylvania
Attorney for State, Andrew Demarest, Esq.
Harrisburg, PA

4/30/07
Commonwealth of Pennsylvania v. Jonathan Mitchell
Attorney for Defense: Nicole Spring, Esq.
Lycoming County, PA

2/26/07
Chester E. King et al. v. County of Gloucester, et al.
Attorney for Plaintiff: Stanley King, Esq.
Gloucester County, New Jersey

12/13/06
RE: Joseph Wolk
Attorney for Defense: Daniel Rucket, Esq.
Montgomery County, PA

11/14/06
Commonwealth of Pennsylvania v. Robert Flor
Attorney for Defense: Bradley Bastedo, Esq.
Bucks County, PA

6/14/06
Vaughn v. Moskowitz
Attorney for Defense: Marcy Matson, Esq.
United States District Court, Lancing, Michigan

3/15/06
Commonwealth of PA v. Brian Yasipour
Attorneys for Defense: William Mealy, Esq. and Nicole Spring, Esq.
Lycoming County, PA

3/6/06
Deborah Lunsy v. Good Samaritan
Attorney for Plaintiff: Thomas Replogle, Esq.
Ohio

1/30/06
State of Washington v. Hower

Attorney for Defense David LaCross and John O'Melveny
Port Orchard, WA

1/16/06
Estate of Neva Oeschger
Attorney: Michael Friedman, Esq.
Delaware County, PA

1/12/06
State of New Jersey v. Lavar Winder
Prosecuting Attorney William Merz, Esq.
Atlantic County, NJ

10/18/05
Joseph Guinter v. Sunrise Concrete, Inc
Attorney for Defense: Sharon Harvey, Esq.
Philadelphia, PA

7/18/05
Harris v. State of California
Attorney for Plaintiff: Marvin Barney, Esq.
Visalia, CA

7/14/05
US v. Raymond Jackson
United States District For The Eastern District of Pennsylvania
Philadelphia, PA

4/25/05
Salvatore Aiello v. Warden of SCI Graterford
United States District For The Eastern District of Pennsylvania
Philadelphia, PA

2/10/05
Hickey v. N.Y
Attorney for Plaintiff: Daniel Cherner, Esq.
N.Y. N.Y.

11/29/04
Commonwealth of Kentucky v. Roach
Gregory Butrum, Esq
Louisville, Kentucky

10/18/04
Commonwealth of Pennsylvania v. Alan Gore
Attorney for Defense: James Gross
Philadelphia, PA

8/25/04
McConnell v. Genuardi's Family Market
Daniel Rucket, Esquire

Montgomery County, PA

8/18/04
Will of Fielding V. Miller, deceased
Attorney for Plaintiff: E.K. Morley, Esquire
Ashe County, North Carolina

8/10/04
Commonwealth of Virginia v. Tobin Jones
Attorney for Prosecution: Virginia B. Theisen
Richmond, VA

6/24/04
Lipskey & Doblovasky v. Himkin et al.
Attorney for Plaintiff: Michael Kowalski, Esq
Luzerne County, PA

4/8/04
Pennsylvania v. Lungin
Attorney for defense: Christopher Mannix
Bucks County, PA

1/27/04
Hickey v. N.Y
Attorney for Plaintiff: Daniel Cherner, Esq.
N.Y. N.Y.

1/2/04
Kamp v. Mintzer
Attorney for plaintiff: Michael Weiss. Esq.
N.J.

10/13/03
Cutright v. Cutright
Karen L. Semmelman, Esq.
Cambersburg, PA

9/15/03
RE: Estate of Michael W. Kizior
Attorney for Defense: Charles F. Smith, Esq.
Massachusetts

6/24/03
Texas
Taylor v Steffek
Attorney for Plaintiff: Alton Todd, Esq.

6/19/03
West Virginia
Riley v. Steffek

Attorney for Plaintiff: Thorn,Esq

3/27/03
Delaware County Orphan's Court
Re: Edna Brady, an alleged incapacitated person
Attorney for Defense: F. Michael Friedman, Esq.

1/23/03
State of New Jersey v. Richard DeBow
Attorney for Prosecution: Cary Shill, Esq.
Expert Testimony: Insanity Defense and Diminished Capacity

11/26/02
Lisa Davis v. Kalachner
Attorney for Plaintiff: Jennifer Diamantis, Esq.
Expert Testimony: Habeas Corpus Hearing

9/11/02
Thomas J. Verzeni v. William J. Henderson, Postmaster General, United States Postal Service
United States District Court for the Middle District of Pennsylvania
Attorney for Plaintiff: Jordan B. Yeger, Esq.
Expert Testimony: Americans with Disabilities Act

9/4/02
United States v. Alonzo Spellman
United States District For The Eastern District of Pennsylvania
Attorney for Defense: Judith S. Gracey, Esq.
Expert Testimony for Defense: Competency to Stand Trial

6/22/02
Eric Stuart v. Bally's Total Fitness
United States District For The Eastern District of Pennsylvania
Attorney for Plaintiff: Mathew Wolfe, Esq.
Expert Testimony for Planitff: Americans with Disabilities Act

6/14/02
Ohio
Weiss v. Good Samaritan Hospital
Attorneys for Plaintiff: Tom Replogle, Esq. and GianOughlu
Deposition: Psychiatric Malpractice

6/4/02
Spegon v. Harbor
Florida
Attorney for Defense: Mindy Robbins, Esq
Deposition: Psychiatric Malpractice

4/26/02
State of New Jersey v. Carlos Moore
Attorney for Prosecution: Chester Wiech, Esq.

Expert Testimony for Prosecution: Competency to Waive Miranda Rights and Mental State at the time of Offense

2/17/02
Gina G. Pin v. Interstate Industrial Corp. and Allan Schwartz
Attorney for Plaintiff: Stephen F. Brock, Esquire
Deposition: Sexual Harassment

9/21/01
Scott Corbmann v. UNUM Provident
Attorney for defense: Andrew Sasco, Esq.
Deposition for Defense: Disability Matter

7/17/01
Commonwealth of Pennsylvania v. Charles McManus
Bradford County Courthouse
District Attorney: Stephen G. Downs, Esq.
Expert Testimony for Prosecution: Mental State at the time of the Offense

5/20/01
United States v. James Rufus McCoy
United States District For The Eastern District of Pennsylvania
Attorney for Defense: Lee Ruslander, Esq.
Expert Testimony for Defense: Competency to Stand Trial and Mental State at the time of the Offense.

3/23/01
State of New Jersey v. Richard Carrick
Atlantic County Courthouse
Attorney for Prosecution: Curtis Baker, Esq.
Expert Testimony for Prosecution: Competency to stand trial, Competency to waive Miranda Rights, and Mental State at the time of the Offense.

12/7/00
State of New Jersey v. John Bennett
Atlantic County Courthouse
Attorney for Prosecution: Elizabeth Sylvester, Esq.
Expert Testimony for Prosecution: Mental State at the time of the Offense

9/16/00
State of Pennsylvania v. Rangel Vangas
Philadelphia County Court of Common Pleas
Attorney for defense: Michael Parlow, Esq.
Expert Testimony for Defense: Mental State at the time of the Offense.

5/30/00
Joseph Thornton v. Brogan Cadillac, Inc
Superior Court of New Jersey, Law Division
Attorney for Plaintiff: Helene Herbert, Esq.
Deposition: Americans with Disabilities Act

4/25/00

United States v. John Brian Miller
United States District For The Eastern District of Pennsylvania
Attorney for Defense: Mr. Alfred Merlie, Esq.
Expert Testimony for Defense: Competency to Stand Trial

1/21/00
Edward Riviello v. Community Medical Center
Bureau of Workers' Compensation. Scranton, PA
Attorney for Plaintiff: Michael J. Kenny, Esq.
Deposition: Workers' Compensation Case.

12/3/97
Commonwealth of Virginia v. James Edward Reid
Circuit Court of Montgomery County
Judge: Hon. Ray W. Grubbs
Attorneys for Defense: Peter A. Theodore, Esq., Robert Jenkins, Esq.
Expert Testimony for Defense: Capital Sentencing / Presentation of mitigating circumstances

11/20/96
State of Louisiana v. Darryl Williams
24th Judicial Court, Jefferson, LA
Judge: Hon. Martha E. Sassone
Expert Testimony for the Court: Competency to stand trial

9/25/96
State of Louisiana v. John London
24th Judicial Court, Jefferson, LA
Judge: Hon. Alan J. Green
Expert Testimony for the Court: Competency to stand trial

8/21/96
State of Louisiana v. Terry Havies
24th Judicial Court, Jefferson, LA
Judge: Hon. M. Joseph Tiemann
Expert Testimony for the Court: Competency to stand trial

8/18/96
State of Louisiana v. Glenn Tollet
24th Judicial Court, Jefferson, LA
Judge: Hon. Martha E. Sassone
Expert Testimony for the Court: Competency to stand trial

8/7/96
State of Louisiana v. Demetrius Black
24th Judicial Court, Jefferson, LA
Judge: Hon. Earnest V. Richards IV
Expert Testimony for the Court: Competency to stand trial, and re: Malingering Mental Illness

7/31/96
State of Louisiana v. Matthew Domino
24th Judicial Court, Jefferson, LA

Judge: Hon. JoEllen Grant
Expert Testimony for the Court: Competency to stand trial

7/24/96
State of Louisiana v. Nelson Cortez
24th Judicial Court, Jefferson, LA
Judge: Hon. Susan Chehardy
Expert Testimony for the Court: Competency to stand trial

2001-2015
Assessments and Testimony in numerous cases related to sexual offenses in the State of New Jersey

2003 – 2019/current
Assessments and Testimony in numerous cases for fitness for duty of impaired physicians and other health care professionals in the Commonwealth of Pennsylvania

2018 – 2021/current – Assessments of competency to stand trial and testimony in the State of New Jersey – multiple cases.

2018 -2021/current – Assessments and Testimony related to civil commitment in the State of New Jersey

UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS

CHARU DESAI, Plaintiff v. UMASS MEMORIAL MEDICAL CENTER, INC.; UMASS MEMORIAL MEDICAL GROUP; UNIVERSITY OF MASSACHUSETTS MEDICAL SCHOOL, UMASS MEMORIAL MARLBOROUGH HOSPITAL, MAX ROSEN, M.D., DARREN BRENNAN, M.D., STEPHEN TOSI, M.D., AND KARIN DILL, M.D., Defendants.	CIVIL ACTION NO.: **4:19-cv-10520-TSH**

AFFIDAVIT OF DIANA DESAI, M.D.

Under oath, I depose and state the following:

1. I write this letter, with a heavy heart, on behalf of my mother, Charu Desai, MD.
2. In addition to being a wonderful mother, she had an amazing professional career as a radiologist at UMASS Medical Center. She was well respected by previous chairs and colleagues, including, but not limited to, Drs. Smith, Ferrucci, Balikian, and the late Dr. Umali to name a few.
3. She dedicated her entire life to UMASS, and was wrongfully terminated by Dr. Rosen, the Chair of Radiology at UMASS. Prior to her unlawful termination, she was an extremely pleasant, happy, and optimistic person. She was full of life and was always smiling. She thoroughly enjoyed her work, excelled at her craft, and was thankful to be able to save countless lives and help patients in need.

4. Following Dr. Rosen's despicable treatment of my mother, she has not been the same person and has since been diagnosed with severe depression. I have tried to be there for her every step of the way. I personally set her up with a therapist, who she had a few sessions with.
5. With COVID restrictions in place, I found it harder to be there for her.
6. My dad has stopped working since my mom left employment so that he could completely dedicate himself to being there for my mom full time, however he noticed that her symptoms were getting significantly worse than he could handle. As a physician himself, he felt that it was in his wife's best interest to seek professional psychiatric help. I felt similarly. Therefore, my father reached out to Dr. Cutler, a local psychiatrist, in order to set up an appointment on her behalf. She has been in therapy ever since.
7. My mom initially wanted avoid seeing a psychiatrist at all costs because of the stigma and humiliation associated with mental illness. She thought she would be able to get through the trauma associated with her termination by having familial support. Although my dad and I initially thought that we would be able to support my mom emotionally in order to help her overcome the devastation associated with her termination, we noticed a continued decline in her mental health. We no longer felt it appropriate to manage the situation on our own, especially with COVID limiting direct personal interactions. We felt that there was no choice except to force her to get professional psychiatric help, as it was in her best interest.
8. Of note, my mother never had any psychiatric issues in the past. At present, she continues to experience intense distress and anxiety, and is consumed by the litigation with UMASS. She cannot think about anything else. More recently, I have noticed days where

she sobs inconsolably and has difficulty getting out of bed. She used to be able to do an active job search, but given her recent emotional state, those efforts have been temporarily halted.

Signed under the pains and penalties of perjury this 26 day of July, 2021.

MD

Diana Desai, M.D.

UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS

CHARU DESAI, Plaintiff v. UMASS MEMORIAL MEDICAL CENTER, INC.; UMASS MEMORIAL MEDICAL GROUP; UNIVERSITY OF MASSACHUSETTS MEDICAL SCHOOL, UMASS MEMORIAL MARLBOROUGH HOSPITAL, MAX ROSEN, M.D., DARREN BRENNAN, M.D., STEPHEN TOSI, M.D., AND KARIN DILL, M.D., Defendants.	CIVIL ACTION NO.: **4:19-cv-10520-TSH**

AFFIDAVIT OF SHRISH DESAI, M.D.

Under oath, I depose and state the following:

1. I have been married to my wife, Charu Shirish Desai, for over 50 years.
2. She has experienced significant deterioration of her mental health since Dr. Rosen fired her at UMASS Medical Center.
3. Prior to this traumatic event, I would describe Charu as a person that was full of life. She felt deeply fulfilled at work and enjoyed her personal time with family and friends. She regularly participated in recreational activities.
4. Now, she has difficulty doing basic things that she was able to do before. She no longer drives, so I drive her everywhere if she needs to do something essential. But she prefers to spend most of her time at home. I would describe her general personality right now as lethargic, lacking enthusiasm and energy. She often forgets things . She cries a lot. She

cannot seem to get over what happened to her at UMASS and has told me that life is not worth living if this is what she has to experience. Lately, she appears more overwhelmed by and preoccupied with the lawsuit than ever before. She keeps saying that the whole situation with UMASS was "premeditated murder." I can only hope that she will recover in the near future. I am worried that with her current state right now that she may never recover from this trauma. I pray this is not true.

5. Since this all happened to my wife, I quit working. I felt that I needed to support Charu full time due to the extent of the grief that she was experiencing as a result of UMASS' actions.
6. To cheer us up with everything going on, my daughter held a surprise "retirement party" for my wife and me, even though she knew that Charu was terminated and that I had to stop working in order to help my wife. She thought that if she could find a way to show Charu how many people adored and respected her, then my wife could get over the pain associated with her firing. She also thought it would cheer me up too because I did not want to stop working. I actually retired in 2002 but have been doing contract work since then at the same hospital. Charu and I had no plans to stop working had this situation with UMASS not come about. Unfortunately these "cheer up" mechanisms did not help my wife.
7. Last year, I forced her to see a psychiatrist because I felt that the situation became too difficult to handle without seeking professional help. I even set up the appointment for her. She sees a psychiatrist regularly. But I personally don't think that these sessions are making her better, especially with what I have seen lately.

Signed under the pains and penalties of perjury this 26 day of July, 2021.

Shirish Desai M.D.

Shirish Desai, M.D.

UMassMemorial | University of Massachusetts Medical School

Department of Radiology

University Campus
55 Lake Avenue North
Worcester, MA 01655
Tel: 508-856-2520/2215
Fax: 508-856-4669
jerry.balikian@banyan.ummed.edu

Jerry P. Balikian, MD, FACR
Professor of Radiology
Director, Thoracic Radiology

May 14, 2001

Edward H. Smith, M.D.
Professor and Chairman
Dept. of Radiology
U Mass Memorial Health Care
Worcester, MA 01655

Dear Ed:

I am most pleased to provide this supporting letter for Charu Desai, M.D; for promotion to "Clinical Associate Professor of Radiology on the non-tenure track".

I have known Dr. Desai for nine years as an associate member of my Division of Thoracic Radiology.

I have come to appreciate and admire her exceptional mind in picking up abnormalities on a chest x-ray. She is dependable, hardworking and can be trusted with great responsibilities. She is not only a suburb chest radiologist she is also very well trained with an additional fellowship in abdominal imaging which is a great asset to the institution.

She is shy to servicing conferences and to public appearances but makes up for it by patiently teaching on a person to person level. Her ability to integrate findings and arrive at a judgment are very commendable.

Charu has a pleasant personality, a good sense of humor and gets along well with the attendings, residents, technicians, and the patients.

I recommend her highly for this promotion. I am confident that she will justify your trust in her and bring great credit to the Department and the Institution as an outstanding clinical radiologist and teacher.

Sincerely,

Jerry P. Balikian, M.D.

UMassMemorial | University of Massachusetts Medical School

Department of Radiology

University Campus
55 Lake Avenue North
Worcester, MA 01655
Tel: 508-856-2520 or 5740
Fax: 508-856-1860
E-mail: balikiaj@ummhc.org
www.umassmemorial.org

Jerry P. Balikian, MD, FACR
Professor, Thoracic Radiology
Interim Director,
Thoracic Radiology

September 20, 2015

To Whom It May Concern:

I am most pleased to provide this letter of recommendation for Dr. Charu Desai.

I have known Dr. Desai for about 20 years as my most esteemed associate in the division of Thoracic Radiology at UMass Memorial – University of Massachusetts Medical School.

Charu is a superb clinical radiologist, very well known for her accurate diagnoses. She spares no time in teaching radiology residents and clinical attendings in face to face discussions of patients radiographic studies. Her interests include pulmonary diseases.

On the personal side, she has a most pleasant personality, highest ethical and moral standards and well respected among her peers.

I recommend her with great enthusiasm and I am confident that she will justify your trust in her and bring great credit to your institution.

With best regards.

Sincerely,

Jerry P. Balikian M.D. FACR

Jerry P. Balikian, M.D., F.A.C.R.

To whom it may concern:

I am a radiologist and have worked with Charu Desai in the Cardiothoracic Imaging Division of the Department of Radiology at UMass Medical Center for the past 3 years. My work is as a part-time radiologist, and when at work I have sat at a work station next to Charu, so we have interacted quite a bit over the past 3 years. Charu has always been very friendly, kind, and available for interaction regarding imaging cases.

Charu works with the radiology residents, as this is a teaching hospital. From what I have seen, she is very patient and helpful while teaching the residents and reviewing cases. I gather that the residents enjoy their time working with Dr. Desai.

While reviewing and reading the imaging cases myself I have always had the feeling that when comparing to prior cases that Charu had interpreted, that her readings were very careful, thorough, and accurate. I don't recall observing any important mistakes or errors.

Also, Charu is very helpful and patient when reviewing imaging studies with attending physicians and residents from other specialities. From what I have observed, she helps them understand the imaging findings, and answers the questions they have concerning the imaging.

I highly recommend Charu as a radiologist for the position you may be considering her for.

Sincerely,

Daniel Berman

Daniel Berman, MD
Department of Radiology
Umass Medical Center

WILLIAM J. BLAKE, M.D.
1084 MAIN STREET
HOLDEN, MASSACHUSETTS 01520
TELEPHONE (508) 829-7269

May 17, 2001

Doctor Edward H. Smith
Chairman, Department of Radiology
University of Massachusetts Medical School
55 Lake Avenue North
Worcester, Massachusetts 01655

Dear Doctor Smith:

I'm delighted to be able to recommend Dr. Charu Desai (CHARU S. DESAI, M. D.) for appointment as Clinical Associate Professor of Radiology on the non-tenure track.

I got to know her and work with her at Holden District Hospital during 1983 - 1990. Her knowledge of clinical medicine and the way she applied this to her interpretation of X-Rays and C-T scans made her a valuable asset in our hospital. She was always cheerful, cooperative, and very proficient.

I would not hesitate to recommend her for the position on your staff.

Sincerely yours,

WILLIAM J. BLAKE, M. D.

WJB/mlk

UMassMemorial | University of Massachusetts Medical School

Department of Radiology

University Campus
55 Lake Avenue North
Worcester, MA 01655
www.umassmemorial.org

April 3, 2018

To Whom This May Concern:

I am writing this letter on behalf of Dr. Charu Desai. I have personally known Dr. Desai for the last 13 years and can vouch for her dedication, work ethic, knowledge of radiology and passion for teaching.

She taught me chest radiology as a resident at UMass. She is a fixture in the chest department, an inspiration and a role model. She is dedicated to her job, reliable and a team player. The UMass chest division has ungone significant transformations and turmoil in the last 13 years with perpetual turnovers in chest radiologists. This has made the division unstable having gone through 4 division chiefs in the last few years. To her credit, she is the most senior staff remaining in the chest division and the workhorse of that division. Unfortunately, this also adds undue pressure on the few staff that are present to keep the division running. If there is ever a question on a case, we know exactly who is always there and who to ask for help.

It is with a heavy heart to hear that she will be leaving us in the near future. I feel she with be a strong asset to whichever organization she ultimately decides to join.

Sincerely,

Andrew Chen MD
Assistant Professor of Neuroradiology
University of Massachusetts Medical School

WORCESTER CITY HOSPITAL
A Major Teaching Hospital

26 QUEEN STREET
WORCESTER, MA 01610-2490
TEL: 508-799-8016
FAX: 508-799-8314

October 15, 1991

Edward Smith, M.D.
Chief of Radiology
University of Massachusetts Medical Center
55 Lake Avenue North
Worcester, Mass. 01610

Dear Dr. Smith,

I am writing in support of Dr. Charu Desai's candidacy for a staff position in your radiology department.

I have known Charu for fifteen years. During my radiology residency she was a pathology resident at the Mount Auburn Hospital. She subsequently spent time at the Worcester City Hospital as part of her radiology training program at University of Massachusetts while I was a staff radiologist. She ultimately joined our group, Radiology Clinics Inc. in 1984 as a staff radiologist at Worcester City Hospital. In addition she had simultaneous privileges at Fairlawn Hospital, Harrington Memorial Hospital, and the Holden Hospital. Charu functioned as the sole radiologist at Holden Hospital from 1985-1988 with the exception of her vacation time.

Charu is an exceptional person. The Holden Hospital required her handling of approximately 15,000 cases per year with heavy emphasis on all imaging modalities in addition to routine x-ray diagnoses, fluoroscopy, venography, needle localizations, and lumbar myelography. She is extremely dependable, cooperative, diligent, efficient, and knowledgeable. She is always pleasant and courteous to patients and staff alike and was always willing to accomodate those who lacked some of these attributes. Her unpretentious demeanor, amiability, and competence inspired admiration from her colleagues, department staff and patients wherever she went.

WORCESTER CITY HOSPITAL
A Major Teaching Hospital

26 QUEEN STREET
WORCESTER, MA 01610-2490
TEL: 508-799-8016
FAX: 508-799-8314

I suspect that as an alumna of your residency program I am merely substantiating what you and your colleagues already know to be true.

Charu Desai was the only member of our group of eight radiologists that **everyone** admired and as a department chief you can truly appreciate the significance of this unanimous character endorsement.

I therefore can provide an unequivocal recommendation of Charu to your department. I wish her well and shall miss working with her.

Yours truly,

Robert D. Chiulli, M.D.
Chief of Radiology
Worcester City Hospital

RDC:aew

UMassMemorial | University of Massachusetts Medical School

Department of Surgery
Division of Thoracic Surgery

67 Belmont Street
Worcester, MA 01605
Tel: 508-334-8996
Fax: 508-334-6296

A. Alan Conlan, MD, FACS
Professor, Thoracic and Cardiac Surgery
Chairman, Thoracic Surgery

May 14, 2001

Edward H. Smith, M.D.
Professor and Chairman
Department of Radiology
55 Lake Avenue North
Worcester, MA 01655

Dear Dr. Smith:

I am writing in response to your letter of April 4, 2001 requesting an evaluation of Dr. Charu Desai who is under consideration for an appointment to Clinical Associate Professor of Radiology on the non-tenure track.

Dr. Desai is known to me in the course of my clinical practice of thoracic surgery over the last six years. Dr. Desai is a pleasant and helpful collcague whose area of interest includes thoracic surgery, thoracic trauma, and thoracic inflammatory disease processes. She has provided a good service and I have always appreciated her calls to alert us of an important abnormality or a question of cancer, new or recurrent. She is skillful in her interpretation of postoperative chest x-rays and CT scans. Her professional expertise is good and her personal qualities are excellent.

I cannot comment on Dr. Desai teaching commitments and ability as this is conducted inside the department of radiology. I am disappointed that Dr. Desai has not published and written more as reflected in her CV. In consideration of her appointment as Clinical Associate Professor of Radiology on the non-tenure track, Dr. Desai has excellent standing within her discipline and is a competent and helpful colleague. I cannot comment, as I outlined above, on her teaching contributions. I feel she should be encouraged to prioritize and both publish as author and co-author significant contributions to clinical radiology in her fields of excellence. This effort in my mind is key to her further development and promotion.

I trust my review and analysis contains the information that you require.

Yours sincerely,

A. A. Conlan.

A. Alan Conlan, M.D.
Professor and Chairman
Thoracic Surgery

AAC:cg

UMassMemorial

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Department of Radiology

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Carl J. D'Orsi, MD, FACR
Professor and Vice Chairman
Director, Diagnostic Radiology

January 7, 2002

Aaron Lazare, M.D.
UMass Memorial Health Care
55 Lake Avenue N.
Worcester, MA
01655

Dear Dr.Lazare,

I am writing in support of Dr.Charu Desai's proposed promotion to Clinical Associate Professor on the non-tenure track. I've known Dr.Desai for 21 years, first in her role as a resident in radiology and subsequently as a member of the staff. My main interest is breast imaging and I had the good fortune of working with Charu for 5 years in mammography. Clinically she demonstrated excellent skills including detection and diagnosis of breast malignancy and communicative skills. I heavily relied on her to fill in when sudden lapses in coverage occurred and Dr.Desai was always willing to accommodate. At present she is a member of the chest service and has performed with equal excellence. With the current problems that radiology is undergoing, Charu has been a pillar, often taking care of the service alone, despite several chronic medical problems.

She is also trusted for her clinical skills by the clinicians she serves. Dr.Ricciardi writes "Dr.Desai.....(is) always willing to go the extra mile to go over very complicated films of the sick oncology patient." Dr.Irwin comments "Dr.Desai's opinion is widely sought by pulmonary specialists, clinicians, other radiologists and residents." She is also very well received by our residents with the majority of her evaluations extremely positive. Dr.Kydd, our current chief resident describes her as ".....an outstanding radiologist in terms of her diagnostic ability....." and having ".....provided my colleagues and myself with outstanding teaching....." Dr.Sanjay Kamath, a former resident, states that Charu ".....has been wonderful both as a teacher as well as a person."

I have absolutely no reservations in strongly recommending Dr.Desai for the promotion she seeks."

Sincerely,

Carl J.D'Orsi, M.D., FACR
Professor and Vice Chairman
Director, Diagnostic Radiology

UMassMemorial
Health Care
55 Lake Ave North
Worcester MA 01655

No Recipients

April 24, 2018

To Whom It May Concern:

This is a letter of support for Dr. Charu Desai, Attending Radiologist here at UMass. I have known Dr. Desai for more than 15 years.

One of the major benefits of working at a medical center is the ability to walk to the Radiology Department and personally review x-ray images with a radiologist. I have done this 100's of time over my 35+ years at UMass. While I have found the radiology team at UMass to be generally very helpful, there are a few radiologists whom I have found over the years whose knowledge and reliability have been especially outstanding. Dr. Desai is one of these few. She has been my "go to" chest radiologist for many years. She is willing to review complicated cases. Her insight and advice have always been impeccable. I think she is a gem and have been honored to work with her over the years.

Sincerely,

George H Eypper

George H Eypper, MD
General Internal Medicine/Adult Primary Care

UMassMemorial | University of Massachusetts Medical School

Department of Surgery
Division of Thoracic Surgery

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Karl Fabian L. Uy, MD
Chief, Division of Thoracic Surgery
Associate Professor of Surgery

March 11, 2020

Letter of Recommendation

Dr. Charu Desai

To Whom It May Concern:

I am writing this letter of recommendation on behalf of Dr. Charu Desai, whom I have known and worked with for the past 12 years in her capacity as a diagnostic radiologist at UMass Memorial Medical Center and the University of Massachusetts Medical School. Much of her clinical time is spent in chest radiology, and because I am a thoracic surgeon I have become familiar with Dr. Desai and the quality of her work, and feel well-qualified to write this letter.

Dr. Desai spent her undergraduate and medical school as well as internship years in India, and thereafter moved to Massachusetts for her training and a long fulfilling career as a radiologist. She did her residency and fellowship in UMass, and thereafter worked in various hospitals in Central Massachusetts and eventually returned to UMass where she has worked since 1992 – consequently, she is well-known and well-loved and appreciated. The Department of Radiology as well as the entire medical center has benefited greatly over the years from her clinical service, aside from generations of Radiology residents whom she has helped train. Her mentorship and excellence in teaching was recognized with the Best Teacher Award in 2017 – a very difficult award to achieve because of the rather large number of excellent faculty members within her department. I am sure that her wealth of knowledge and experience – especially the kind which cannot be sufficiently elaborated on in textbooks – has not been unnoticed by the residents, and that they are showing their appreciation for her sharing this unselfishly.

I and my colleagues in the Division of Thoracic Surgery have benefited immensely from her clinical work – she is very prompt and to-the-point with her readings without too much of the vague and noncommittal terminology which seem to permeate radiology reads nowadays because of medico-legal pressures. I believe she strikes a good balance between the provision of her professional opinion and avoidance of legal issues. She calls us promptly if there are urgent findings to relay, and does not stop at one call if we were not reached. These calls are very appropriate, and there has never been a single time that I considered a call too alarmist or wasteful of time and effort on both our parts. We do appreciate the work that she has provided for our patients through all these years.

Dr. Desai has become so established within our medical center that it is difficult to imagine day-to-day life in my specialty without her; however I understand that she is at a point in her career that she wishes to transition to another kind of position. Given the challenges that we are experiencing in health care in general and in a safety-net hospital such as UMass Memorial Medical Center in particular, I fully understand and support her decision and wish her well in all her future endeavors. You are fortunate to be considered as an institution where she would like to share her expertise, and you will benefit immensely from her lovely personality also.

Please do not hesitate to contact me if you would like to discuss Dr. Desai's application further.

Sincerely,

Karl Fabian L. Uy, MD, FCCP, FACS
Associate Professor and Chief
Division of Thoracic Surgery
UMass Memorial Health Care
University of Massachusetts Medical School

March 22, 2018

Re: Charu Desai MD.

This is a letter of reference for Charu Desai MD.

I am a senior semi-retired diagnostic radiologist who served as Interim Chair of Radiology from 2007 to 2012 at the UMass Memorial Medical Center in Worcester Mass.
Dr. Desai was on the faculty during those years and she and I continue to serve in the Dept of Radiology at UMass Memorial at the present time. Thus, I have had an opportunity to observe and work with her as her Chair and as a colleague for some 11 years.

Dr. Desai completed a residency in Radiology in the late 1980's at UMass and has served on the UMass Radiology Faculty continually for over 26 years. As I understand it, she now seeks a slightly less demanding clinical work schedule.

Professionally she is an outstanding radiologist with special excellence in chest radiology to which she devotes her energies essentially full-time. She has an excellent command of the intricacies of interpretation in chest CT scans and is an expert in plain chest radiographs. She is well regarded by referring clinicians who often seek her out for personal review of scans and clinical consultation. She has been an active teacher over the years and was given the teacher of the year award from the resident staff in 2016.
On a personal level, she is gracious, collegial and reliable. Thus, I am delighted to recommend her for consideration in a diagnostic radiology practice. Do not hesitate to contact me if the occasion should require.

Sincerely,

Joseph T Ferrucci MD
Professor of Radiology Emeritus
University of Massachusetts Medical School

(joseph.ferrucci@umassmemorial.org)

UMassMemorial | University of Massachusetts Medical School

Department of Radiology

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Gopal R. Vijayaraghavan, MD
~~Clinical~~ Associate Professor of Radiology
Director, Breast Imaging

05 April 2018

TO WHOMSOEVER IT MAY CONCERN

Dear Sir/Madam,

It gives me immense pleasure to write this letter of recommendation in support of Dr. Charu Desai's application for an attending radiology position in your practice. I have known Dr Desai or Charu as she is better known for the last 14 years. I joined UMass in 2004 as a fellow, when Charu was already an Attending in Chest Radiology. At that time I enjoyed the 1 month tutorship I received from her on my elective rotation. After my fellowship I joined the Body division as an Attending. Chest and Body divisions shared the same reading area and I interacted with Charu on an almost daily basis during that time. In 2013 I assumed Directorship of the Breast division and my interactions with Dr Desai have been less frequent since then.

Dr. Desai is personable, intelligent, and hardworking. She has demonstrated an extraordinary aptitude for reading chest radiographs and CT scans. Her interpretations are highly valued by our clinicians and radiology colleagues. Infact just this last year the residents awarded Dr Desai with the prestigious "Best Teacher Award" among all radiology faculty at UMass. She is always available, approachable and is a great team-player.

I strongly recommend her for a position in your department. Please reach out to me if you require any additional information.

MD, MPH.
Gopal Vijayaraghavan.

University of Massachusetts
UMASS Medical School

UMassMemorial Health Care

March 25, 2018

To Whom It May Concern,

I write this letter in enthusiastic support of Dr. Charu Desai's application for a Position in the Department of Radiology at your institution.

I have personally known Dr. Desai for almost a decade, and she is amongst the best radiologists with whom I have had the pleasure of working. Her diligence, attention to detail, and ability to detect the most subtle of findings make Dr. Desai an exceptional candidate for a position in your Department.

She is truly distinguished with regards to the quality of work in interpreting both plain radiographs and CT scans. Dr. Desai is the first person that I consult with when interpreting a difficult chest CT scan, which speaks to her exceptional talent and native ability.

Charu was also the recipient of the Teacher of the Year Award, determined by the collective vote of 20 residents; she is commended for her work as a teacher and a mentor, in addition to being a phenomenal physician.

Dr. Desai is a pleasant, committed, and excellent doctor who is well liked and highly respected amongst all members of our Department at UMMHC. Dr. Desai would be an asset to your Department, and I recommend her with the highest endorsement, without reservation. I am extremely sad that she will be leaving us. Please do not hesitate to contact me shall you have any questions.

Sincerely,

Aaron Harman, MD
Assistant Professor
Department of Radiology
UMass Memorial Medical Center
UMass Medical School
(c): 508-397-5506

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University of Massachusetts
Medical School

Department Medicine
Division of Pulmonary, Allergy
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Richard S. Irwin, MD
Professor of Medicine
Director, Division of Pulmonary, Allergy
and Critical Care Medicine

December 24, 2001

Dr. Jeffrey Leppo
Interim Chair
Department of Radiology
University of Massachusetts Medical School
55 Lake Avenue North
Worcester, MA 01655

Dear Dr. Leppo:

I have been asked to write a letter of support for the promotion of Dr. Charu Desai to the rank of Clinical Associate Professor of Radiology. I do so gladly. My comments are based upon knowledge of Dr. Desai's clinical work that dates back to 1979.

As an individual, Dr. Desai is hard working, pleasant and responsible. While appearing shy in groups, she can be quite animated in one-on-one situations.

With respect to training, Dr. Desai has received very good training. She did her undergraduate medical training in India and then completed an internship at the Mount Auburn Hospital in Cambridge. She was the first individual to complete her radiology residency at our institution where she served as Chief Resident from 1979 to 1981. Following her residency, she completed a fellowship in Computed Body Tomography/Ultrasound at our institution and then joined the staff here for one year. From 1983 until 1991, Dr. Desai was in private practice in Worcester and then returned to join our faculty. She has been on our faculty as Assistant Professor of Medicine since 1992 to the present time.

With respect to clinical skills, Dr. Desai's opinion is widely sought by pulmonary specialists, clinicians, other radiologists and residents. She has demonstrated skillful interpretation of all chest-imaging procedures.

With respect to teaching, I have no direct first hand knowledge of Dr. Desai's performance. It would not surprise me if she received the highest marks from radiology residents in training.

With respect to research and scholarly activities, Dr. Desai's curriculum vitae shows Dr. Desai's productivity to be on the modest side.

In summary, I support Dr. Desai's promotion from Assistant Professor to Clinical Associate Professor of Radiology.

Sincerely,

Richard S. Irwin, M.D.

kab

UMassMemorial | University of Massachusetts Medical School

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Richard S. Irwin, MD, Master FCCP
Professor of Medicine & Nursing
Chair, Critical Care Operations
Editor-in-Chief, CHEST

March 29, 2018

To Whomever This May Concern,

I have been asked by Dr. Charu S. Desai to write a letter of recommendation in support of her desire to join your group in the specialty of Thoracic Radiology. I gladly do so because I believe that Dr. Desai is a worthy applicant. My comments are based upon a long-standing collegial relationship that she and I have had since 1979 at the University of Massachusetts Medical Center and then UMass Memorial Medical Center. Dr. Desai was a Chief Resident in Radiology in 1979, the year that I arrived as the Chief of the Pulmonary Division.

As a person, I have always known Dr. Desai to be a hardworking, responsible individual of the highest moral caliber.

While I have not witnessed Dr. Desai's teaching skills first hand, she has achieved high marks by radiology residents that culminated in her being awarded the Best Teacher Award in 2017.

With respect to clinical skills, I cannot remember any of my patients ever suffering any adverse effects based upon readings made by Dr. Desai; and I frequently had the opportunities over the years to seek Dr. Desai's advice about cases. By reading Dr. Desai's curriculum vitae, I have been impressed by the number of courses she has taken to keep up with new thoracic imaging modalities.

In summary, I believe that Dr. Desai is a worthy candidate for a position in your group as a thoracic radiologist. Please do not hesitate to contact me should you wish to speak with me in person.

Sincerely,

Richard S. Irwin, MD, Master FCCP

UMassMemorial

Medical Center
Department of Radiology

University Campus
55 Lake Avenue North
Worcester, MA 01655
Tel: 508-856-2215
Fax: 508-856-4669

May 25, 2001

Edward H. Smith, M.D.
Professor and Chairman
Dept. of Radiology
U Mass Memorial Health Care
Worcester, MA 01655

Dear Dr. Smith:

I am writing this supporting letter for Charu Desai, M.D. who I understand is being considered for promotion to Clinical Associate Professor of Radiology on the non-tenure track.

I have known Dr. Desai for almost eight years. As a teacher during my residency training she has been wonderful both as a teacher, as well as a person. Charu has a pleasant personality and gets along well with her residents and colleagues. Her diagnostic ability with reference to thoracic radiology is excellent. I recommend her highly for this promotion and fully support her appointment to Clinical Associate Professor of Radiology on the non-tenure track.

Sincerely,

Sanjay Kamath, M.D.

SK/djb

David Kydd, MD, FRCPC
Dept. of Radiology
UMMC, University Campus
55 Lake Avenue North
Worcester, MA, 01550

May 11th, 2001

To Whom It May Concern:

I am writing this letter in reference to Charu Desai, MD, who I understand is being considered for an appointment as Clinical Associate Professor of Radiology on the non-tenure track.

I myself am completing my tenure as Chief Resident in the Department of Radiology at the University of Massachusetts Medical Center. I have served on promotions committees in other hospitals, which gives me some insight into what is expected for academic promotion.

I have known Dr. Desai, personally and professionally, for almost three years. I have also had extensive interaction with her in her role as a chest radiology attending here at the University of Massachusetts.

In her role as a teacher, she has provided my colleagues and myself with outstanding teaching in regards to chest radiology, and is a very personable in one-on-one discussions. I also consider her an outstanding radiologist in terms of her diagnostic ability, particularly with reference to thoracic radiology.

In view of her long record of teaching, and her experience as a chest radiologist, I fully support an appointment for Dr. Desai to Clinical Associate Professor of Radiology on the non-tenure track.

Sincerely,

David Kydd, M.D, (Chief Resident, Dept. of Radiology), FRCPC (Neuropathology)

UMassMemorial

University of Massachusetts
Medical School

Department of Radiology
Division of Nuclear Medicine

Department of Medicine
Division of Cardiology

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jeffrey.leppo@umassmed.edu

Jeffrey A. Leppo, MD
Professor/Clinical Director

November 30, 2001

Aaron Lazare, MD
Chancellor/Dean
University of Massachusetts
Medical School

Dear Dr. Lazare:

I am writing in support of the promotion of Dr. Charu Desai to the rank of Clinical Associate Professor of Radiology on the non-tenure track. Dr. Desai was among the first residents to complete her training at UMass in the Department of Radiology. She returned in the early 1990's as a faculty member after working in private practice for several years.

Over the past decade Dr. Desai has achieved a valued position in our clinical service. Her area of expertise is in thoracic radiology. Her clinical acumen is very highly regarded by referring physicians, and her attention to clinical service is impressive. Over the past 8 months the Radiology Service has been under a great deal of stress, and Charu has really risen to the task. With members of her diagnostic division having been out sick or on vacation, she has covered the entire Chest Service as a solo practitioner. Her turnaround time is very rapid and among the leaders of the department. She has been a real supporter of the entire service during this crisis. Although she has not been active in the publication field or giving outside lectures, Dr. Desai has been an excellent one-on-one teacher at the reading area with many present and former residents giving her high marks for her teaching ability. Approximately 2/3 of her teaching evaluations have an average score in the in the above average to outstanding level and individual letters (Drs. Kydd and Kamath) document her personal impact.

Dr. Desai demonstrates continued enthusiasm in support of the department in whatever capacity that is needed. During the past 6 months she has been an inspiration to her colleagues to maintain a high level of clinical service during a period of departmental resignations and a large decline in enthusiasm.

Dr. Desai has achieved excellence in clinical service and teaching ability, which should ensure her credentials for promotion. Her tremendous efforts, loyalty and plucky resolve during this period of intense challenges should be sufficient to merit this well deserved promotion. If our diagnostic service is going to survive, we need radiologists like Charu, and she remains a delightful colleague who is well liked by her professional colleagues as well as the staff technologists.

Therefore, I strongly support this promotion and look forward to having Dr. Desai as a role model for our newer faculty.

Sincerely,

Jeffrey A. Leppo, MD
Interim Chair

JAL:bv

UMassMemorial | University of Massachusetts Medical School

Department of Radiology

University Campus
55 Lake Avenue North
Worcester, MA 01655
www.umassmemorial.org

May 15, 2018

To Whom It May Concern:

I am pleased to write this letter of support for Charu Desai, MD for a position in your radiology department.

I have known Charu for 7 years, first as my teacher as a resident in the University of Massachusetts Diagnostic residency program, and currently have the pleasure of working alongside my teacher and now colleague in the chest imaging department at University of Massachusetts Medical Group.

Charu is a careful and observant radiologist, I am always awed at her precision and incredible ability to pick up findings. This is especially apparent on plain films, which in my opinion is the hardest place to be detecting these findings. I run the weekly thoracic tumor boards, and often review new lung cancer cases that trace back to an amazing call by her on a chest radiograph or CT. In my opinion, she is beyond proficient and competent in reading all types of chest imaging studies. I feel lucky to have had her as a teacher. She brings wisdom and experience to the reading room.

As a colleague, Charu is friendly, kind, and caring. She always greets me with a smile, encouraging words, and is an absolute pleasure to be around. I enjoy working with her and will miss her greatly.

Please feel free to contact me with any questions or for further information. In conclusion, I highly recommend Charu without hesitation for a position in your radiology department – both as an esteemed radiologist as well as a wonderful person.

Sincerely,

Lacey McIntosh, DO, MPH

Director of Oncologic Imaging
Body, Chest, and PET/CT Divisions
Department of Radiology, University of Massachusetts Medical Group
Assistant Professor
University of Massachusetts Medical School
55 Lake Ave North
Worcester, MA 01655
(774) 441-1213

Smith, Edward

From: Ricciardi, Paul
Sent: Monday, April 30, 2001 7:17 PM
To: Smith, Edward
Cc: Ricciardi, Paul
Subject: promotion of Charu S. Desai, M.D. to Clinical Associate Professor of Radiology

Dear Dr. Smith,

It is my pleasure to write this letter of support on behalf of Charu S. Desai, M.D. for appointment as Clinical Associate Professor of Radiology on the non-tenure track.

I have had the pleasure of knowing Dr. Desai since 1984 when I was a fellow in Hematology/ Oncology and was rotating at the Worcester City Hospital. It was at that time that I recognized that Dr Desai was a dedicated physician and teacher, always willing to go the extra mile to go over very complicated films of the sick oncology patient. When I finished my fellowship, it was my extreme pleasure to learn that Dr. Desai would be an attending radiologist at one of my outreach clinics in Southbridge. During the eight years that I worked with Dr. Desai at Harrington Hospital,she distinguished herself as one of the finest radiologist that the institution ever had. Working tirelessly to perform a litany of procedures on a very sick patient population, reading films in an expiditious fashion, talking incessantly to attending physicians on the phone about urgent outpatient or inpatient studies, yet Dr. Desai always made time to go over studies with me and help me make important therapeutic decisions for my patients!

Dr. Desai has now joined the staff of UMassMemorialMedCenter and once again I'm delighted to be able to interact with her and review many of my difficult thoracic oncology cases. When I was running the Thoracic Oncology Clinic, it was always a plus to have Dr Desai's input about any new case or case under treatment.

In conclusion, Dr. Desai has already accomplished an enormous amount of work, both clinically and academically. Dr Desai has been a tireless, dedicated academic radiologist and educator. She has exceptional abilities and sets the highest standards for herself and her students, residents, fellows and co-workers. Without question she has been a respected, extremely knowledgeable radiologist and teacher who should be appointed to the rank of clinical associate professor of Radiology.

Sincerely,

Paul A. Ricciardi, M.D.
Associate Professor of Medicine
Division of Hematology/Oncology
UMass Memorial Medical Center

KATHLEEN M. MCCARTEN, MD
RICARDO A. ROSALES, MD
16 BONVINI DRIVE
FRAMINGHAM, MA 01701
PHONE (508) 877-4936

October 5, 1991.

TO WHOM IT MAY CONCERN:

LETTER OF RECOMENDATION FOR DR. CHARU DESAI, RADIOLOGIST FOR RADIOLOGY CLINIC, INC.; WORCESTER, MASSACHUSETTS.

I have known Dr. Desai since July of 1984 when I joined the staff of Radiology Clinic, Inc. and worked with her until December of 1990, as a General Radiologist, including C.T. Scanning, Ultrasound, Nuclear Medicine and Mammography.

Dr. Desai is a cmpetent professional who could be best described as: efficient, resourceful, inteligent, hard worker and dependable.

She will score "EXCELLENT" in effort, attitude and performance.

She has a good personality, so, that Physicians and Technologists find easy working and getting along with her.

Dr. Desai receives my unrestricted recomendation.

Sincerely,

Ricardo Rosales, MD

Ricardo A. Rosales, M.D.

I am Board Certified in Diagnostic Radiology with Special Competence in Nuclear Radiology and Board Eligible in Nuclear Medicine.

WACHUSETT
FAMILY PRACTICE ASSOCIATES, INC.
52 BOYDEN ROAD • SUITE 209 • HOLDEN, MASSACHUSETTS 01520
TELEPHONE: (508) 829-4351

LEROY E. MAYO, M.D.
DAVID A. ROSENFIELD, M.D.
JANET C. ABRAHAMIAN, M.D.
LEONARD A. WAICE, D.O.

May 8, 2001

Edward H. Smith, MD
Professor and Chairman
Department of Radiology
UMass Memorial Health Care
55 Lake Avenue North
Worcester, MA 01655

Dear Dr. Smith,

I am writing to recommend Dr. Charu S. Desai for appointment as Clinical Associate of Radiology on the non-tenure track.

I am a family doctor in Holden, and I had the pleasure of working with Dr. Desai when she was the attending radiologist at Holden Hospital between 1983-1990. It was a pleasure to work with Dr. Desai. She has outstanding clinical acumen. Myself and my colleagues benefited from her excellent readings. She made herself available to myself and the other doctors at the hospital and provided expert advice. Medical students and residents who sometimes accompany us in our practice found her to be very helpful. I wholeheartedly recommend Dr. Desai for promotion.

Please contact me if you have any further questions.

Yours sincerely,

David A. Rosenfield, MD

David A. Rosenfield, MD

DAR/ajw

UMassMemorial | University of Massachusetts Medical School

Department of Radiology

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55 Lake Avenue North
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E-mail: smithe@ummhc.org

Edward H. Smith, MD
Chairman and Professor

July 15, 2001

Aaron Lazare, MD
Chancellor Dean
University of Massachusetts
Medical School

Dear Dr. Lazare:

I would like to take this opportunity to recommend for promotion, from the rank of Assistant Professor to Clinical Associate Professor on the non-tenure track in the Department of Radiology, Dr. Charu S. Desai. Dr. Desai did her undergraduate and medical training in India, completed an internship at the Mt. Auburn Hospital in Cambridge, and was, I believe, the first individual to complete her radiology residency at the University of Massachusetts Medical Center, serving as chief resident from 1979 – 1981. Following her residency she completed a fellowship in Computed Body Tomography/Ultrasound here and joined the staff for one year. From 1983 until 1991 Dr. Desai was in private practice in Worcester and then returned to join our faculty. Since arriving here in January of 1992, Dr. Desai joined the division of thoracic radiology and has developed into an extremely competent clinical thoracic radiologist. Her opinion is widely sought by pulmonary specialists, clinicians, other radiologists and residents.

Dr. Desai is an extremely conscientious, capable and gracious individual and an outstanding team player. She certainly has been of great value to the department. I recommend her promotion with enthusiasm.

Sincerely,

Edward H. Smith, MD
Professor and Chairman

EHS:bv

UMassMemorial

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Department of Radiology

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Tel: 508-856-3578
Fax: 508-856-4669

Dr. Jeffrey Leppo
UMass Memorial Health Care
55 Lake Avenue N.
Worcester, MA
01655

January 16, 2002

Dear Dr. Leppo,

I am extremely happy to write this letter of support for Dr.Charu Desai's promotion to Clinical Associate Professor on the non-tenure track.

I have known Dr.Desai for 21 years now from when she was a resident here at the University of Massachusetts Medical Center. I have now worked with her as a co-attending thoracic radiologist for 10 years.

Dr.Desai is an astute, very capable, caring and conscientious thoracic radiologist. She is dependable and hardworking.

As program director of the University's residency, I know that the residents greatly value the one to one teaching in thoracic radiology that they receive from her. She also gives the chest radiology lectures to medical students taking their radiology elective.

It is such a privilege to have worked and still be working with Dr. Desai. Her personality has contributed greatly to the very congenial, frictionless atmosphere of our section, despite the heavy workload, while at the same time ensuring that the educational mission of our section is fulfilled.

I recommend Dr. Desai very enthusiastically for this promotion.

Sincerely,

Dr. Cynthia Umali-Torres, M.D.
Residency Program Director

RADIOLOGY CLINIC, INC.
390 MAIN STREET
WORCESTER, MASSACHUSETTS 01608
PHONE 752-7588

DAVID J. CAVAN, M.D.
FRANK A. WHITE, M.D.
MONA A. KORGAONKAR, M.D.
ROBERT D. CHIULLI, M.D.

PRAVEEN B. GULATI, M.D.
CHARU S. DESAI, M.D.
RICARDO A. ROSALES, M.D.
NICHOLAS C. MAZANITIS, M.D.

October 30, 1991

Edward Smith, M.D.
Chief Of Radiology
University Of Massachusetts Medical Center
55 Lake Avenue North
Worcester, Massachusetts 01610

Dear Dr. Smith;

I have had the pleasure of knowing Dr. Desai since 1983 when she joined our group of Radiologists. I have found her to be a very sincere, loyal, concerned and dedicated person with very high principles and integrity.

Dr. Desai is an excellent radiologist drawing from a wealth of knowledge. She has very good reasoning, is persevering and has an analytical mind. She is very affable and kind to the patients. She is highly thought of and extremely well liked by the medical staff, technicians and secretaries.

I would not hesitate to recommend her and believe she will prove to be an asset to any group she may join.

If I can be of any further help please do not hesitate to contact me.

Sincerely,

Frank

Francis A. White, M.D.

FAW/am

SIMON E. WITTER, M.D., F.A.C.O.G.
C. SCOTT KOENIG, D.O., M.D., F.A.C.O.G.

SOUTHBRIDGE OB-GYN ASSOCIATES, INC.
MEDICAL ARTS BUILDING, SUITE 205
100 SOUTH STREET
SOUTHBRIDGE, MASSACHUSETTS 01550

TELEPHONE 765-5981

November 13, 1991

To Whom it May Concern:

I am pleased to write on behalf of Dr. Charu Desai, who has been one of our Radiologists for six years at Harrington Memorial Hospital.

During this time, I have known Dr. Desai to be a reliable and very competent radiologist who not only gives precise interpretation of films, but will call me, and actively discuss any difficult, clinical case I am following. Dr. Desai has been very helpful to me in the delivery of the medical care I try to render as an OB/GYN specialist. Her opinions have been very helpful in deciding the best care of my patients, and she is always interested in the final outcome of each case.

She is pleasant and well liked by our staff. We regret her leaving, but understand the exigencies of life. She is a team player whose knowledge blends in concert with the medical staff and her colleagues. Her expertise is highly respected.

In addition, she is admired for her deportment as a refined lady whose character is above reproach. I can highly recommend Dr. Desai without reservation, and I hope she will be happy in her new assignment.

Sincerely,

Simon E. Witter

Simon E. Witter, M.D.

SEW/ecm

7/26/2021

To whom it may concern,

I have known Dr. Charu Desai in a professional capacity since 2004 when I started working at UMass Memorial Medical Center. Charu is a dedicated, caring and outstanding thoracic radiologist. She was well respected for her expertise and was a trusted colleague over the years. She cared deeply about her work and especially cared about her patients. Charu was also one of the nicest persons with whom I have had the pleasure to work. She was always willing to help out her colleagues and always did so with a smile. Her kind and thoughtful demeanor was endearing to colleagues, referring physicians, residents and students alike. She was a dedicated and invaluable member of the Radiology department and contributed greatly to clinical work and teaching.

I was shocked to have learned about Dr. Desai's termination, and to see the emotional toll that this has taken on her. She is clearly distraught not only by its effect on her professional reputation, but more so that she can no longer provide care to the patients she has served for so long. I sense anguish and grieving in Charu to have had her long and distinguished career so abruptly terminated. Charu has become withdrawn and is not her usual cheerful self. Charu is deeply saddened by the sudden loss of her life's work which was a part of her for so long. I too am saddened to see her this way.

SINCERELY,

JOSEPH MAKRIS MD

EXHIBIT B

Michael Morrison Ph.D.
Economic consulting

5205 Caprock Dr. NE, Rio Rancho, NM 87144
Tel: 505-231-0041
Mtmichael@gmail.com

Economic Report

To: Patricia A. Washienko, Esq.

From: Michael Morrison Ph.D.

Date: 07/27/2021

Re: *Dr. Desai v. UMass Memorial Health, et al.*

Part I Background

Dr. Desai is a 71 year old (July 6, 1950) woman residing in Worcester, Massachusetts who was a radiologist at the UMass Memorial Health ("Employer"). She was hired 27 years ago (in 1992) as a Radiologist and served as Radiologist until March 17, 2019.

It is my understanding that prior to her termination Dr. Desai was paid $340,000.00 per year in salary as well as receiving an 8% contribution to her 401k plan, life insurance coverage valued at $50,000.00, and Continuing Medical Education expenses valued at $4,000.00 per year. Dr. Desai was employed at UMass Hospital for 27 years and planned to continue her employment for an additional 10 years. On March 17, 2019, Dr. Desai's employment was terminated from UMass Hospital.

Dr. Desai believes she was terminated due to discrimination. As a direct result of Dr. Desai's termination, she was diagnosed with major depressive disorder and has been n the care of psychiatrist and on medication since her diagnosis on May 25, 2020.

Prior to her termination of employment, Dr. Desai learned that a younger co-worker was receiving in addition to their regular compensation 1.5 academic/administrative days per week. On academic/administrative days the co-worker was not required to perform clinical duties. Dr. Desai also is aware that another younger co-worker was paid $10,000 per year more than her since 2016. Dr. Desai contends that this is further evidence of discrimination.

Assignment

I have been retained to form an opinion to a reasonable degree of economic certainty as to the present value of lost earnings and the value of reduced quality of life associated with major depressive disorder resulting from Dr. Desai's termination.

The Basis for Economic Damages

Economic damages related to lost earnings are based on the economic concept of *opportunity cost*. If, as a result of an illegal act, a person is deprived of the opportunity to earn a living, the resulting damages are equal to the cost of restoring the injured person's lost opportunity or providing what would have reasonably been the fruits of exercising it. In this case, it is alleged that Dr. Desai was wrongfully terminated due to discrimination. Her early termination prevented Dr. Desai from continuing to work. Additionally her termination caused her to develop major depressive disorder, which reduced her quality of life; preventing her from fully enjoying her leisure time. The calculation of the value of the reduced quality of life is a 3-part process.

1. Establishing the value of time. This has been done based on the employee's contractual salary as of $340,000.00/year, which represents an agreement between Employer and Dr. Desai about the minimum value of her time. This number is converted to a daily rate, assuming a 52-week contract. This figure is then applied to a full 24-hour day. This number represents what Dr. Desai is willing to accept for 24 hours of her time. This isn't related to Dr. Desai's employability, instead it is Dr. Desai's value of her leisure time.
2. Establishing the reduction in quality of life. This is a measure of how much the major depressive disorder has reduced her quality of life. This is essentially the same concept as quality-of-life adjusted life expectancy. Through a survey of relevant academic research (from refereed sources), several "suffering multipliers" have been gathered. A corresponding value of reduced quality of life has been calculated for each multiplier and is reported in Part IV below.
3. Establishing the duration of suffering. This has been calculated from the date of termination and the date of diagnosis of major depressive disorder.

Part II Lost Earnings

For this analysis I am defining the period of lost earnings to be from March 17, 2019, to July 27, 2021. Lost salary, 401k contributions, lost continuing medical education funding, and unawarded academic/administrative days are included in this calculation. Life insurance costs have not been calculated as I understand Dr. Desai is asking Employer to secure an equivalent life insurance policy for Dr. Desai.

Lost Salary

At her the time of her termination, Dr. Desai was earning an annual salary of $340,000.00. Dr. Desai has stated her intention of continuing to work until at least 2029, so future lost earnings are calculated for 10 years. According to the U.S. Bureau of Labor Statistics[1] the inflation rates for March 2019 to February 2020 and March 2020 to July

[1] CPI – for All Urban Consumers, Bureau of Labor Statistics https://data.bls.gov/cgi-bin/surveymost. Updated Jul 2021, accessed Jul 2021

2021 are 1.54% and 5%. The expected annual inflation rate from August 2021 to March 2029 is 1.61%[2]. Additionally, O-Net from the U.S. Department of Labor[3] reports an expected 4% growth in the radiologist profession over the next 10 years. This value is used as a proxy for salary growth from March 2019 until March 2029. Values for lost salary assuming no inflation or salary growth, inflation adjusted, and inflation and salary growth adjusted are reported below.

Lost 401k Contributions

In addition to her salary, earnings also include the value of 401k contributions Dr. Desai received. Dr. Desai reports that UMass Hospital contributed 8% of her salary to her 401k. Without knowing how Dr. Desai's 401k is invested, the lost 401k contributions are calculated using known growth in the S&P 500 from March 2019 to July 2021, and the expected growth rate of the S&P 500 as reported by S&P 500 Global Market Intelligence[4] for the next 10 years. As with the lost salary calculations, the lost 401k contributions are calculated assuming no salary growth, inflation adjusted, and inflation and salary growth adjusted salaries are used for the 401k contributions. The values are reported below.

Lost Academic/administrative days

The value of lost academic/administrative days are calculated with no salary growth, inflation adjusted and inflation, and salary growth adjusted annual salaries. The value of lost academic/administrative days are calculated based on the following equation

$$Value\ of\ Academic\ days = 1.5 * \frac{Salary}{52\ weeks * 5\ days}$$

Values are calculated for 10 years using no salary growth, inflation adjusted, and inflation and salary growth adjusted salaries. The values are reported below.

Lost Continuing Medical Education

The value of lost Continuing Medical Education is calculated assuming an annual value of $4,000.00 per year as reported by Dr. Desai. The values are reported below.

[2] Inflation Expectations, Federal Reserve Bank of Cleveland https://www.clevelandfed.org/our-research/indicators-and-data/inflation-expectations.aspx. Updated Jul 2021, accessed Jul 2021.
[3] O-Net Online 29-1224.0 Radiologist, U.S. Department of Labor https://www.onetonline.org/link/summary/29-1224.00. Updated 2020, accessed Jul 2021
[4] Scheid, Brian, "S&P 500 returns to halve in coming decade – Goldman Sachs", Jul 15 2020, https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/s-p-500-returns-to-halve-in-coming-decade-8211-goldman-sachs-59439981.

Part III Value of Reduced Quality of Life

Establishing Value of Time

Dr. Desai's value of time is estimated using her salary at the time of termination, as the last mutually agreed upon value of Dr. Desai's time. The value of a day of Dr. Desai's time is calculated using the following equation.

$$value\ of\ a\ day = 24\frac{hours}{day} * (\frac{Salary}{52\frac{weeks}{year} * 40\frac{hours}{week}})$$

Using the equation above, one day of Dr. Desai's time is valued at $3,924.08

Establishing Reduction in Quality of Life

The reduction in quality of life was determined by a close examination of the extant literature on the effects of depression on quality of life. Jia, et al in 2015[5] determined depressive symptoms and quality of life scores for 276,442 individuals. It was determined that the quality of life for all participants was reduced by 33.92%, and 60.74% for the over 65 group.

Steensma et al in 2016[6] used the Canadian Community Health Survey as well as the Health Utilities Index to calculate health related quality of life measures. The authors found that quality of life was reduced by 32.18% for those with depression.

IsHak et al 2015[7] calculate the improvement in quality of life for 2,280 adults following several different interventions. As part of their work the authors calculated that major depressive disorder reduced quality of life by an average of 49.1%

Values of suffering were calculated for each of the reduction in quality-of-life values listed above and are reported below.

Establishing Duration of Suffering

Values of suffering were calculated since the date of diagnosis (5/15/2020) as well as the date of termination (3/17/2019) and are reported below.

[5]Jia, Haomiao, Matthew M. Zack, William W. Thompson, Alex E. Crosby, and Irving I. Gottesman. "Impact of depression on quality-adjusted life expectancy (QALE) directly as well as indirectly through suicide." Social psychiatry and psychiatric epidemiology 50, no. 6 (2015): 939-949.

[6]Steensma, C., L. Loukine, H. Orpana, L. McRae, J. Vachon, F. Mo, M. Boileau-Falardeau, C. Reid, and B. C. Choi. "Describing the population health burden of depression: health-adjusted life expectancy by depression status in Canada." Health promotion and chronic disease prevention in Canada: research, policy and practice 36, no. 10 (2016): 205.

[7]IsHak, Waguih William, James Mirocha, David James, Gabriel Tobia, Jennice Vilhauer, Hala Fakhry, Sarah Pi et al. "Quality of life in major depressive disorder before/after multiple steps of treatment and one-year follow-up." Acta Psychiatrica Scandinavica 131, no. 1 (2015): 51-60.

Part IV Value of Reduced Quality of Life and Lost Earnings

The values reported in this section are raw values and not present value adjusted. Present-value adjusted values are reported in the following section.

Value of Lost Wages

The calculated values for lost earnings are reported below:

No Inflation:	$3,400,000.00
Inflation:	$3,645,456.84
Inflation and Salary Growth:	$3,912,436.69

Value of Lost 401k Contributions

The calculated values for lost 401k contributions is reported below.

No Inflation adjustment in salary:	$3,723,757.00
Inflation adjustment in salary:	$4,253,600.71
Inflation and Salary Growth	$4,820,015.51

Value of Lost Academic/Administrative Days

Total Loss to date:	$239,307.69
Expected Loss:	$778,730.77

Value of Lost Continuing Medical Education

Total loss (to date and expected):	$40,000.00

Value of Reduced Quality of Life

Values are reported assuming Dr. Desai was suffering from major depressive disorder from the moment of her termination, and since the date of the official major depressive disorder diagnosis. As well as, using the reduced quality of life values calculated by Jia, et al (2015) (both total and 65+), Steensma, et al (2016), and IsHak, et al (2015).

Duration	Jia, et al 2015		Steensma, et al 2016	IsHak, et al 2015
	65+	All		
Since 3/17/2019	$10,741,983.84	$5,999,299.28	$5,691,798.41	$6,261,194.06
Since 5/25/2020	$9,705,434.83	$5,420,396.18	$5,142,567.64	$5,423,283.68

Present Value

Once the value of lost future earnings has been established, it must be reduced to present value. That is, one must determine how much money would have to be set aside and invested today to provide that future loss in earnings. The only element that is uncertain in calculating the present value is the net rate of return that will be earned on the funds that are invested for future use. Because the loss of future earnings are estimated using the

current value of the dollar (net of inflation), they are discounted using an expected rate of return that is also real (net of inflation).

The discount rate used here to determine the present value of future lost earnings is calculated using the 10-year treasury rate.[8]

Present Value of Lost Earnings

The calculated values for lost earnings are reported below:

No Inflation:	$3,217,197.29
Inflation:	$3,461,050.14
Inflation and Salary Growth:	$3,708,661.02

Present Value of Lost 401k Contributions

The calculated values for lost 401k contributions are reported below.

No Inflation adjustment in salary:	$3,288,751.16
Inflation adjustment in salary:	$3,756,699.01
Inflation and Salary Growth	$4,256,945.76

Present Value of Lost Academic/Administrative Days

Total Loss	$927,067.85

Present Value of Lost Continuing Medical Education

Total loss (to date and expected):	$35,327.24

Present Value of Reduced Quality of Life

Values are reported assuming Dr. Desai was suffering from major depressive disorder from the moment of her termination, and since the date of the official major depressive disorder diagnosis. As well as, using the reduced quality of life values calculated by Jia, et al (2015) (both total and 65+), Steensma, et al (2016), and IsHak, et al (2015).

Duration	Jia, et al 2015		Steensma, et al 2016	IsHak, et al 2015
	65+	All		
Since 3/17/2019	$9,725,952.26	$5,431,854.97	$5,153,439.10	$7,862,123.50
Since 5/25/2020	$8,689,403.24	$4,852,951.87	$4,604,208.33	$7,024,213.12

Summary of Findings

Based on the information I have available at the present time; I have formed an opinion to a reasonable degree of economic certainty that Dr. Desai's present value losses to date range from $1,535,807.33 to $6,081,293.11. Her present value future losses range from $10,536,744.55 to $12,572,661.02. Dr. Desai's present value present and future losses because of her termination and the resulting major depressive disorder diagnosis range

[8] Treasury yields

from $12,072,551.88 to $18,653,954.13. These values are calculated based on lost earnings, 401k contributions, academic/administrative days, continuing medical education fund and reduced quality of life associated with a diagnosis of major depressive disorder. These values are calculated assuming Dr. Desai would have worked an additional 10 years beyond her date of termination.

This opinion is based on the information I have at this time. I reserve my right to supplement this opinion as any new information becomes available that would materially change the damages in the case such as changes in interest rates, a change in Dr. Desai's current or additional diagnoses, or a change in actual or expected inflation rates.

As required by Federal Rule 26(b) regarding the opinions of expert witnesses I state the following:

In forming my opinion in this matter I have relied upon the following information:

1. Information provided by Patricia A. Washienko, Esq., set out in Appendix A.
2. Information from public published sources as footnoted in my report.

Attached is a copy of my current curriculum vita, which includes a list of all my publications in the last 10 years.

I hereby state that I am being compensated as an expert in this case at the rate of $1,750 for this report and $350 per hour for any additional work. I have spent approximately 6 hours up to this point on this case.

Attached is a copy of cases that I have testified in over the past 4 years and it is current as of this date.

SIGNED UNDER THE PAINS AND PENALTIES OF PERJURY ON THIS DAY OF 7/30/2021.

_____

Michael Morrison Ph.D.

Michael Morrison Ph.D.
Economic consulting

5205 Caprock Dr. NE, Rio Rancho, NM 87144
Tel: 505-231-0041
Mtmichael@gmail.com

Economic Report - Addendum

To: Patricia A. Washienko, Esq.

From: Michael Morrison Ph.D.

Date: 07/27/2021

Re: *Dr. Desai v. UMass Memorial Health, et al.*

Addendum

Dr. Desai's termination and major depressive disorder diagnosis forced Dr. Desai's husband, Shirish Desai, to prematurely retire as well. Mr. Desai had also planned to work for an additional 10 years. At his current salary of $150,000 per year. The present value of total lost salary is between $1,419,351.75 and $1,570,077.18. Lost salary values are calculated based on the assumption of no salary growth and inflation adjusted annual salary. Values for actual and expected inflation are the same as in the main report.

I hereby state that I am being compensated as an expert in this case at the rate of $1,750 for the main report and $350 per hour or the addendum and any additional work. I have spent approximately 1 hour on this addendum and 7 hours total on this case.

SIGNED UNDER THE PAINS AND PENALTIES OF PERJURY ON THIS DAY OF 8/1/2021.

_____

Michael Morrison Ph.D.

Previous Cases:

I have not testified in any cases as of July 28, 2021

I have provided an Economic Impact Report for Tim Kolman, Esq. for an EEOC complaint.

Appendix A

Charu Desai was born on July 6, 1950. She resides in Worcester, Massachusetts.

Dr. Desai is a radiologist. She began working at UMass in the Department of Radiology in 1992. Dr. Desai was informed of her termination on March 17, 2018. Her termination became effective March 17, 2019.

As of the effective date of Dr. Desai's termination, she had worked at the UMass entities for 27 years. She planned to finish out her career there. She had no immediate plans to retire; rather, she expected to work at least ten (10) more years (i.e., until March 2029, when she would be 78 years of age).

At the time of her termination, Dr. Desai was paid an annual salary of $340,000. Dr. Desai believes that her employer matched her 401(k) contribution at 8%.

Throughout her employment, Dr. Desai also received life insurance coverage. Due to her age and health condition, it is cost prohibitive for her to purchase comparable life insurance (a $50k death benefit) on the open market. (As part of her damages / part of the resolution of this matter, Dr. Desai seeks to secure a life insurance policy in the amount of $50,000 from Defendants, or, alternatively, that Defendants provide her with payment in that amount.)

Dr. Desai has incurred losses in the amount of approximately $9,000 in lost Continuing Medical Education Fund benefits ($4,000 annually).

Dr. Desai was not awarded "academic days" on which days she would not have been required to perform clinical duties. Younger doctors were granted academic days. A younger radiologist, who was hired three years before Dr. Desai's termination, was given one and one-half academic and/or administrative days per week (i.e., 78 per year).

Dr. Desai also is aware that another younger co-worker was paid $10,000 per year more than her since 2016.

Since her termination, Dr. Desai has diligently searched for another radiology position but has not secured or even been offered one.

In March 2019, Dr. Desai's husband, also a medical doctor, stopped doing locum tenens work, for which work he earned approximately $150k annually, to care for her, as she was so distressed by her termination it impacted her day-to-day functioning. He has not performed any locum tenens work since then.

Dr. Desai was diagnosed on 5/25/2020 with major depressive disorder and has been in the care of a psychiatrist (and on medication) since that time.

Michael Morrison
Assistant Professor
5205 Caprock Dr.
Rio Rancho, NM 87144
Home: (505)231-0041, Office: (814)731-1657
Email: mmorrison@edinboro.edu

EMPLOYMENT HISTORY

Assistant Professor (tenured) at Edinboro University of Pennsylvania (August 2013-Present)

EDUCATION

Ph.D. Economics, University of New Mexico, Albuquerque, NM August 2013
M.A. Economics, University of New Mexico, Albuquerque, NM August 2012
B.S. Economics, Montana State University, Bozeman, MT 2004

DISSERTATION **The Law of One Price and Virtual Worlds**

Part I. "Virtual World Research in the Social Sciences"
Part II. "Price Convergence after Cataclysm"
Part III "STAR modeling of Band of Inaction Variations"
Committee: Prof. Matías Fontenla (Co-Chair), Prof. Christine Sauer (Co-Chair), Prof. Alok Bohara, Prof. Christopher Butler

FIELDS OF SPECIALIZATION

Primary: International Economics
Secondary: Development Economics and Environmental Economics

PUBLICATIONS AND PAPERS

Publications

Morrison, Michael, and Matías Fontenla. "Price Convergence in an Online Virtual World." Empirical Economics (2013): 1-12.
Morrison, Michael and Matías Fontenla. "Purchasing Power Parity across Eight Worlds," Economics Letters 158 (2017): 62-68.

Works in Progress

Morrison, Michael and Christine Sauer. "Band of Inaction Variations in Response to Changes in Transaction Costs," Working Paper
Morrison, Michael and Scott Duda. "The Balance of Payments and the Band of Inaction," Working Paper
Morrison, Michael. "The Harrod-Balassa-Samuelson Effect and the Band of Inaction," Working Paper.
Morrison, Michael and Kyle Hurysz. "Impact of BP Oil Spill on Aggregate Transportation Costs," Working Paper.
Dexter, John, Michael Morrison, Da Ler, and Tara Lambert. "Increasing the Likelihood of Sitting for the CPA Examination: Effects of Incorporating CPA Review Course Materials in Intermediate Accounting Classes," Working Paper

Conference Presentations

Morrison, Michael and Christine Sauer, "The Variable Band of Inaction: Transaction Costs and the Size of the Band of Inaction," Southwestern Social Science Association 2018 Annual Meeting, Orlando, FL 2018
Morrison, Michael and Dennis Barber III, "What can Virtual Behavior offer to Entrepreneurship Education," Southeast Decision Science Institute, Savannah, GA 2015
Morrison, Michael and Dennis Barber III, "Does the EAO Remain Valid in the Virtual World," Pennsylvania Economic Association Conference, Edinboro, PA 2014
Morrison, Michael and Matías Fontenla "Price Convergence After Cataclysm," 56th annual Western Social Science Association Conference, Albuquerque, NM 2014

Morrison, Michael and Christine Sauer, "Variable Band of Inaction: Transaction Costs and the Size of the Band of Inaction," 56th annual Western Social Science Association Conference, Albuquerque, NM 2014

Morrison, Michael and Matías Fontenla, "Price Convergence in an Online Virtual World," 91st annual Southwestern Social Science Association Meeting, Las Vegas, NV. 2011

Morrison, Michael "Estimating and International Property Rights Value for Haiti," 51st annual Western Social Science Association Conference, Albuquerque, NM. 2009

Morrison, Michael "Testing the Purchasing Power Parity Hypothesis within an Online Virtual Economy," 89th annual Southwestern Social Science Association Meeting, Denver, CO. 2009

Other Presentations

Morrison, Michael and Matias Fontenla. "Purchasing Power Parity across Eight Worlds," Edinboro University Academic Festival, Edinboro, PA 2017

Morrison, Michael "Price Convergence after Cataclysm" Faculty Research Presentation at Porreco, Erie, PA 2016

Morrison, Michael "Unemployment in the U.S. Structural or Cyclical?" Al Stone Lecture Series, Edinboro, PA 2014

Morrison, Michael and Matías Fontenla, "Price Convergence after Cataclysm," Department of Business and Economics Research Symposium Series, Edinboro, PA. 2013

TEACHING EXPERIENCE

International Finance, Edinboro University of Pennsylvania, fall 2018-present
Econometrics, Edinboro University of Pennsylvania, spring 2015-present
International Economics, Edinboro University of Pennsylvania, spring 2014-present
Economic Development, Edinboro University of Pennsylvania, fall 2013-present
Principles of Macroeconomics, Edinboro University of Pennsylvania, 2014- present
Principles of Microeconomics, Edinboro University of Pennsylvania, fall 2013-spring 2018
Career Preparation Seminar, fall 2015-spring 2016
Business Primer, Edinboro University of Pennsylvania, fall 2014, fall 2016
Intermediate Macroeconomics, University of New Mexico, summer 2011–fall 2012
Introductory Macroeconomics, University of New Mexico, spring 2010–winter 2012.

RESEARCH/WORK EXPERIENCE

Research Assistant, David Brookshire, Albuquerque, NM, summer 2008-fall 2009
Responsibilities included assisting, in implementation of economic experiments, designing, printing and distributing an online and mail contingent valuation method (CVM) and choice experiment (CE) survey.

PROFFESIONAL HONORS

Nominated for Faculty Member of the Year at Edinboro University of Pennsylvania, 2016-2017 academic year.
Southern Economic Association sponsored graduate student presentation, $155, November 2012

RESEARCH FUNDING

Research Travel Projects Grant, Office of Graduate Studies University of New Mexico, "Price Convergence in a Virtual World, March 2011, $700

SERVICE

Expert Witness for Kolman Law P.C. Summer 2021
Project Lead/Primary Contributor ACBSP decennial re-accreditation report Fall 2020
Assistant Department Chair, Department of Business and Economics, summer 2017-present
Chair, Elections and Nominations Committee, APSCUF (faculty union) spring 2019-

present
Member, Board of Directors, Erie Humane Society (formerly Humane Society of Northwest Pennsylvania), spring 2019 - present
Faculty Member, Presidential Working Group #2, spring 2017
Co-Adviser, Business and Economics Club, spring 2016 - present
Adviser, Alpha Kappa Psi – Business Fraternity, spring 2016- present
Co-Adviser, Delta Mu Delta – Business Honor Society, spring 2016 - presents
Founding member, Humanity and Sustainability Institute, fall 2015-present.
Co-Chair, General Education Redesign Task Force, Edinboro University of Pennsylvania, fall 2013-summer 2016.
Referee, Energy Economics 2014
Student Recognition Committee, Department of Business and Economics, Edinboro University of Pennsylvania, fall 2013-Present.
Economics Comprehensive Exam Committee, Department of Business and Economics, Edinboro University of Pennsylvania, fall 2013-Present.
Sabbatical Leave Committee, Department of Business and Economics, Edinboro University of Pennsylvania, fall 2013-Present.
Department Secretary, Department of Business and Economics, Edinboro University of Pennsylvania, fall 2013-spring 2014.
Referee, Applied Economics – 2011, 2019

CURRICULUM DEVELOPMENT

Co-Presenter, Center for Faculty Excellence, "Teaching Critical Thinking Effectively," Edinboro University of Pennsylvania, September 2018 and February 2019.
Participant, OSET Workshop, "Designing Courses for Effective Student Learning," UNM, May 2010 and August 2011.

TECHNICAL SKILLS

STATA, RATS, MS OFFICE GNUPLOT, SPSS, SQL

MEDIA APPEARANCES

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Quality of Life in Major Depressive Disorder Before/After Multiple Steps of Treatment and One-year Follow-up

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Abstract

Objective—This study examines the impact of Major Depressive Disorder (MDD) and its treatment on Quality of Life (QOL).

Method—From the Sequenced Treatment Alternatives to Relieve Depression (STAR*D) trial, we analyzed complete data of 2,280 adult MDD outpatients at entry/exit of each level of antidepressant treatments and after 12-months of entry to follow-up. QOL was measured using the Quality of Life Enjoyment and Satisfaction Questionnaire (Q-LES-Q). The proportions of patients scoring ‘within-normal’ QOL (within 10% of Q-LES-Q community-norms) and those with ‘severely-impaired’ QOL (>2SD below Q-LES-Q community-norms) were analyzed.

Results—Before treatment, no more than 3% of MDD patients experienced ‘within-normal’ QOL. Following treatment, statistically significant improvements were detected, however the proportion of patients achieving ‘within-normal’ QOL did not exceed 30%, with>50% of patients experiencing ‘severely-impaired’ QOL. Although remitted-patients had greater improvements compared to non-remitters, 32%-60% continued to experience reduced QOL. 12-month follow-up data revealed that the proportion of patients experiencing ‘within-normal’ QOL show a statistically significant decrease in non-remitters.

Conclusion—Symptom-focused treatments of MDD may leave a misleading impression that patients have recovered when, in fact, they may be experiencing ongoing QOL deficits. These findings point to the need for investigating specific interventions to ameliorate QOL in MDD.

Keywords

Quality of Life; Major Depression; Antidepressants; Functional Outcomes; Patient-reported outcomes

INTRODUCTION

According to the World Health Organization (WHO), quality of life (QOL) represents the individual’s subjective evaluation of physical, mental, and social domains (1). Major depressive disorder (MDD), which is the leading cause of disability globally affecting nearly 350 million people worldwide (2), is associated with substantial deficits in QOL (3,4). Importantly, QOL deficits have been shown to persist beyond the clinical resolution of symptoms (5), placing patients at an increased risk for relapse and rising direct and indirect costs (6). A poor QOL often overlaps with depressive symptom severity (7). However, a number of studies have shown that the severity of depressive symptoms explained only a small proportion of the variance in QOL (3, 4, 8). These findings suggest that assessing symptom reduction alone may not be the best way to gauge the success of MDD interventions. Despite being increasingly recognized as an important measure of health in

medical and psychiatric patients (9, 10), QOL needs to be given more attention in clinical and research efforts in MDD.

To fully assess the impact of MDD and its treatment on QOL, we analyzed QOL data from the Sequenced Treatment Alternatives to Relieve Depression (STAR*D) trial (11, 12), the largest prospective randomized study of treatment effectiveness for outpatients with MDD. Previous STAR*D reports have already shed some light on QOL in MDD (13, 14). Trivedi and colleagues found that greater MDD symptom severity was statistically significantly associated with reduced QOL, and that socio-demographic factors such as race, education, employment, and medical insurance status, as well as general medical and depressive illness were independently associated with poorer QOL (13). Daly and colleagues further examined QOL across psychological, physical, and social domains, showing low correlations between these three domain measures, suggesting that they evaluate different and non-overlapping aspects of function (14). However, the full details of the pre-treatment QOL, the immediate and long-term impact of treatment on QOL, and the clinical significance of the aforementioned themes remain to be investigated. Moreover, studies examining what depressed patients ranked as important goals for treatment revealed that patients hope to return to ‘normal’ levels of functioning and QOL (15). Research seems to point to the notion that patients and clinicians seem to expect this normalization after achieving remission (15), an idea that has yet to be examined. We know very little about the proportions of patients with ‘normal’, i.e., close to community norm QOL scores, before and after treatment. This present analysis examines QOL at entry and exit of each of the four levels of the acute treatment phase as well as the 12-months follow-up phase of the STAR*D study. We hypothesized that:

1. Prior to treatment, MDD patients will report statistically significant QOL deficits, defined as the minority of patients reporting ‘within-normal’ QOL and the majority reporting ‘severely-impaired’ QOL.
2. QOL will show statistically significant improvement with each treatment level, however a proportion of patients will continue to experience the aforementioned QOL deficits immediately after acute treatment.
3. After 12 months, patients who achieved MDD remission will experience higher QOL scores, perhaps close to those seen in community norms.

Aims of the study

The aim of the study is to examine Quality of Life at the entry and exit of each of the four levels of the acute treatment phase as well as the 12-months follow-up phase of the STAR*D study.

Material and methods

Study Population

Funded by the National Institute of Mental health (NIMH), the STAR*D study was conducted at 18 primary care and 23 psychiatric care centers in the United States. STAR*D enrolled 4,041 treatment-seeking outpatients aged 18–75 between 2001 and 2007, all

carrying a primary diagnosis of MDD. Full details of the study's methodology are described elsewhere (11, 12). The authors of the present study obtained an NIMH Data Use Certificate to utilize the STAR*D Public Ver3 dataset. To be eligible for the present analysis, participants needed to have complete data for each of the outcome measures detailed below, at both entry and exit for each level of the study. Patients who were in remission at the beginning of each level were excluded. The analyzed dataset of this study contained 2,280 Level1-participants, 749 Level2-participants, 190 Level3-participants, 56 Level4-participants, and 414 participants from all levels at 12-months follow-up.

Treatments Administered

The treatment interventions are detailed elsewhere (11, 12). Briefly, treatments were administered according to a fixed-flexible dosing schedule and modified based on each participant's response. Patients were moved to the next level if they did not achieve remission. Participants were enrolled into the following STAR*D levels:

Level 1: Citalopram monotherapy.

Level 2: Switching to sertraline, sustained-release (SR) bupropion, extended-release (XR) venlafaxine, or Cognitive Behavioral Therapy (CBT) OR Augmenting with bupropion SR, buspirone, or CBT.

Level 3: Switching to nortriptyline or mirtazapine OR Augmenting with lithium or Triiodothyronine (T3).

Level 4: Switching to tranylcypromine OR Switching to venlafaxine XR + mirtazapine.

The study used an equipoise stratified randomized design which allowed patients a choice between several switch or augmentation strategies, within the permissible limits of the study design. This approach was adopted in lieu of complete randomization in order to mimic clinical practice (16). During the follow-up phase, patients were strongly advised to continue taking the previously effective drug(s) (17).

Outcome Measures

QOL was assessed using the Quality of Life Enjoyment and Satisfaction Questionnaire (Q-LES-Q) (18). The Q-LES-Q is a self-report instrument that measures satisfaction and enjoyment in a series of discrete domains of functioning such as mood, social relationships, living or housing situation, and physical health. This study uses the short version, which has 16 items, each scored on a 5-point Likert scale. Summing up the results of the 14 first items, then dividing by the maximum possible score and multiplying the figure by 100 gives a total score ranging from 0 to 100, with 0 being lowest QOL score and 100 the highest. Community norm samples have a mean Q-LES-Q score of 78.3 (SD=11.3) and scores within 10% of this value, i.e., Q-LES-Q≥70.47, are considered 'within-normal' QOL (1), which corresponds with the 75th percentile. Q-LES-Q scores greater than 2 SD below the community norm scores, i.e., Q-LES-Q scores≤55.7, are considered 'severely-impaired' QOL (19), which corresponds with 95th percentile. The Q-LES-Q has shown moderately negative correlations with the Clinical Global Impressions–Severity of Illness scale (CGI-S) ($r = -0.62$ for the summary scale) and the 17-item Hamilton Rating Scale for Depression ($HRSD_{17}$) ($r = -0.61$ for the summary scale). The Q-LES-Q also has strong psychometric

properties (Cronbach's α=0.90, test-retest reliability r=0.74) (18). Although STAR*D did include the SF-12 as another QOL/Functioning instrument, a number of limitations (with the SF-36 and its abbreviated version, SF-12) precluded its use for our purpose in studying QOL, the most important of which are: the confusion/mix-up in asking patients to self report functioning level in lieu of QOL, and the equal emphasis on physical and mental components of health status (4). Therefore, we limited the analysis to using the Q-LES-Q.

MDD symptom severity was measured using the Quick Inventory of Depressive Symptomatology-Self Report (QIDS-SR) (0 =not depressed to 27=most depressed) with remission is defined as a score≤5 (20). The QIDS-SR is highly correlated with all three versions of the widely utilized clinician-rated Hamilton Rating Scale for Depression, the Montgomery Åsberg Depression Rating Scale, and the Beck Depression Inventory, with a high internal consistency; Cronbach's alpha =0.86 (20).

Statistical Methods

The variables were assessed and confirmed to have normal distribution. Summary values are expressed as means and standard deviations (SD) for continuous variables, and frequencies (%) for categorical variables. The paired t-test was used for comparisons between entry and exit numerical outcomes, within each level. Effect sizes were calculated for the outcomes (21), in which Cohen's d values of 0.2, 0.5, and 0.8 describe small, medium, and large effects, respectively (22). Since we calculated Cohen's d values in paired samples pre and post treatment, effect sizes were corrected for correlated designs as detailed by Dunlap et al. in 1996 using Equation 3 (23). Entry to exit comparisons of binary variables within each level and follow-up, were assessed using the exact version of the McNemar test for related proportions. The proportions of patients that scored 'within-normal' on the relevant measures were compared between remitters and non-remitters at exit, using the Chi-square test (or Fisher exact test for small sample sizes). Given the number of performed tests, we used a Bonferroni-adjusted 0.01 significance level for each test. Analyses were performed using SAS software, version 9.2 (SAS Institute Inc., Cary, NC).

RESULTS

Study Population Demographics

The demographic characteristics of the analyzed patient sample (n=2,280) are shown in Table 1. At baseline, women constituted nearly two thirds of the study population, the majority of patients were Caucasian, more than one half were employed, and about one third were college graduates. The demographic characteristics of the analyzed sample were comparable to those of the whole STAR*D sample.

Mean Scores on Measures of Depressive Symptom Severity, and Quality of Life

STAR*D level-by-level, pre and post-treatment QOL scores (Q-LES-Q), and depressive symptom severity (QIDS-SR), in addition to scores at entry and exit from the 12-months follow-up phase, are displayed in Table 2.

Patients in the acute treatment phase in each level made statistically significant improvements on both measures. Changes in depressive symptom severity (QIDS-SR scores) showed the following effect sizes (Cohen's *d*) at the end of each level of treatment: *d*=1.05 at Level1, *d*=0.65 at Level2, *d*=0.42 at Level3, and *d*=0.71 at Level4 ($p<0.001$ for all). Changes in QOL, as indicated by differences in pre- and post-treatment scores on the Q-LES-Q, had the following effect sizes: Level1 Cohen's *d*=0.78 ($p<0.001$), Level2 *d*=0.52 ($p<0.001$), Level3 *d*=0.20 ($p=0.002$), and Level4 *d*=0.41 ($p=0.001$).

Interestingly, patients at 12-month follow-up showed statistically significant deterioration on both measures with effects sizes of QIDS-SR Cohen's *d*=-0.43 ($p<0.001$), and Q-LES-Q *d*=-0.38 ($p<0.001$).

It is also important to note that at baseline of Level1, the Pearson's correlation coefficient *(r)* between the QIDS-SR and the Q-LES-Q is 0.74.

Proportions of Patients with 'Within-normal' Quality of Life Scores

STAR*D level-by-level and 12-months follow-up, entry and exit proportions of patients exhibiting 'within-normal' QOL (Q-LES-Q≥70.47) are displayed in Table 3.

At entry to any level, no more than 3% of MDD patients experienced 'within-normal' QOL. Although treatment increased the number of patients achieving 'within-normal' QOL scores, the majority of patients (70.9%) scored lower than the 'within-normal' QOL range.

Nearly 46.4% of follow-up patients were in remission after 12 months of completing acute treatment. The proportions of follow-up patients experiencing 'within-normal' scores for QOL at 12 months decreased from the time of acute treatment phase completion: from 46.6% to 31.6% ($p<0.001$).

Proportions of Patients with 'Severely-Impaired' Quality of Life Scores

Level-by-level, pre- and post-treatment in addition to entry and exit follow-up percentages of patients with 'severely-impaired' QOL (two SD below community norms, i.e., Q-LES-Q = <55.7) are displayed in Table 3.

QOL data, at all treatment levels, revealed that the majority (>80%) of MDD patients experienced 'severely-impaired' QOL at entry. The data also shows that treatment statistically significantly decreased the number of patients with 'severely-impaired' QOL at the end of each level. For instance, at the end of Level1, the percentage of patients experiencing 'severely-impaired' QOL decreased from 85.6% to 50.5% ($p<0.001$). However, consistent with the above findings on 'within-normal' scores, sizable proportions of patients were still left with 'severely-impaired' QOL, ranging from 50 to 70%.

The proportions of follow-up patients experiencing 'severely-impaired' QOL showed a statistically significant increase from 28.5% at entry to follow-up, to 42.5% after 12 months ($p<0.001$).

Proportions of Remitters vs. Non-Remitters with 'Within-Normal' Quality of Life Scores

Remission from MDD is defined as experiencing minimal symptoms or none at all, as measured by QIDS-SR score≤5 (20). As detailed in Table 4, remission was associated with a statistically significant increase in the proportion of patients experiencing 'within-normal' QOL (Q-LES-Q scores) after each level of treatment. However, despite meeting remission criteria, 30–60% of patients did not achieve 'within-normal' QOL scores at exit. Similarly, Table 4 shows that the proportion of patients with 'severely-impaired' QOL showed a statistically significant decrease, especially in remitters. Nevertheless, 9–43% of remitters still scored in the 'severely-impaired' QOL range.

The proportion of follow-up patients with 'severely-impaired' QOL or 'within-normal' QOL scores did not statistically significantly change after 12 months in remitted patients. In contrast, non-remitters showed a statistically significant decrease in proportions of individuals with 'within-normal' QOL scores (from 31.8% to 7.7%; $p<0.001$) and increased proportions of patients with 'severely-impaired' QOL (from 41% to 68%; $p<0.001$).

DISCUSSION

The present study has a number of important findings: Firstly, MDD patients reported statistically significant QOL deficits, i.e., both high proportions of 'severely-impaired' QOL (i.e. >2SD below community norms), and low proportions of patients scoring within the community norm of QOL scores at the entry of each STAR*D level. Secondly, treatment was associated with statistically significant improvement in QOL, although the majority of all MDD patients continue to experience lower QOL than the general population, with a low proportion of them scoring 'within-normal' QOL; in addition, at each level, patients who achieved remission showed greater improvements in QOL compared to their non-remitting counterparts, yet a sizable proportion of remitted MDD patients did not achieve 'within-normal' QOL scores. Thirdly, follow-up data show that the mean QOL scores of all patients declined after 12 months, as did the proportion of overall patients experiencing 'within-normal' scores; an effect that was only statistically significant in non-remitters.

With no more than 3% of STAR*D entry patients—at any level—reporting 'within-normal' QOL, treating MDD poses a tremendous challenge, not only in treating depressive symptoms but also in ultimately improving QOL. Previous studies have shown that QOL is impaired in MDD and that depression severity is a major contributor to poor QOL (3, 4). It has been postulated that there is a bidirectional relationship between QOL and MDD where MDD could lead to poor QOL and vice versa, in addition to the possible negative influence of depression influence on self evaluation including rating one's own QOL (24–26). Our study shows a strong correlation between the QIDS-SR and the Q-LES-Q of 0.74. In other analyses that examined baseline QOL in MDD data, although moderate to high correlations between depressive symptom severity and QOL were detected, regression analyses showed that the former (as measured by the QIDS-SR) accounted for only 48% of the variance in QOL (as measured by the Q-LES-Q) (4). Reduced QOL in depressed patients may be associated with problems with financial issues, family or social relationships, living situation, or physical health. Earlier pre-treatment analyses of the STAR*D study revealed

that socio-demographically disadvantaged patients with greater general medical and depressive illness burden were at greatest risk for poor QOL (13, 14).

One of the primary objectives of the present study was to determine the extent to which observed deficits in QOL in MDD patients could be improved by treatment, and whether the progress could be maintained at 12 months. Our findings indicate that QOL shows statistical significant improvements when MDD is treated, especially in symptom severity and QOL, with the largest effect sizes observed after the first treatment trial (Level1). However, fewer than 30% of patients exiting Level1 of treatment – both remitters and non-remitters - achieved ‘within-normal’ QOL scores. Additionally, more than 50% of these same patients had ‘severely-impaired’ QOL. Low overall remission rates (e.g. 35% at Level1) may partially explain why most patients continued to experience QOL deficits following treatment.

Our findings reveal that remitted patients showed a remarkable change in the proportions achieving ‘within-normal’ QOL scores after treatment. Of note, 68% of remitted patients at the end of Level 1 treatment reported 'within normal' QOL; a proportion that is not markedly different from the proportion expected for the healthy population. This finding points out to the positive QOL gains that could be made in the early stages of treatment. More strikingly, after 12 months of follow-up, the proportion of patients experiencing ‘within-normal’ QOL scores decreased in non-remitters, a trend not observed in remitters. These findings, coupled with previous studies which had reported that patients who failed to achieve complete symptomatic remission often continued to have psychosocial impairment and were more likely to relapse into full depression (27), reinforce the notion that remission (minimal or no symptoms), as opposed to response (typically 50% reduction in severity), should be one of the primary goals of MDD treatment.

Furthermore, our results suggest that treatment should strive to achieve more than mere symptom resolution or remission. A good proportion of remitted patients still had QOL deficits after treatment. Similar deficits in remitted patients have been reported by Angermeyer and colleagues (5), who stated that remitted patients’ QOL scores remained lower than those observed in non-depressed controls, after seven months following discharge for a depressive episode hospital admission. As some remitted patients may return to a perfectly normal social life, others may experience trouble readjusting to their occupational responsibilities in the wake of their depression. These ongoing deficits imply that remitted patients could remain dissatisfied and feel incapacitated across multiple life domains—even after an otherwise clinically successful treatment regimen.

The expectation that QOL could improve spontaneously after symptom remission was not fully supported by the 12-month follow-up data analysis in this study. On the contrary, QOL suffered from statistically significant deterioration specifically in non-remitters, whereas it did not change from entry to follow-up in patients who maintained remission. The above findings are consistent with the literature on long-term follow-up of QOL in MDD (5, 6).

Evidence suggests that improving QOL is an important treatment target for patients with MDD (25). Zimmerman and colleagues examined the outcomes that patients think are

important when treating their MDD (15). Three factors were found to be better indicators of remission than the mere absence of depressive symptoms: the presence of positive mental health, such as optimism and self-confidence, a return to one's usual, normal self, and a return to normal levels of functioning at home, work, or school (15).

Taken together, the findings suggest that while clinicians should target remission as an initial goal of treatment, they need to subsequently extend their interventions to focus on the specific issues where patients continue to experience difficulty, such as QOL and its domains, notwithstanding the contributing factors highlighted above. Interventions that appear in published original research and/or literature reviews, and are postulated to improve QOL include: cognitive behavioral therapy (28), future-directed therapy (29), combined psychotherapy and pharmacotherapy (30), occupational/vocational therapy (31), dopaminergic agents (32), nutrition and nutritional supplements (33), augmentation with omega-3 (34), exercise (35), meditation and yoga (36), humor (37), massage (38), and music (39). QOL interventions could also include the treatment of possible comorbid medical and psychiatric conditions (40, 41), and treatment of sexual dysfunction (42, 43). However, randomized, controlled, large sample studies need to be conducted to confirm the above interventions' usefulness in MDD. An additional approach to improving QOL consists of identifying and compiling the items poorly rated by patients on baseline QOL measures and utilizing them to guide the creation and implementation of a personalized treatment plan containing interventions to address each impaired domain. A wraparound approach to MDD care, combining the efforts of primary care physicians, specialists, nursing staff, social workers and therapists is an option that could be considered (44). Incorporating QOL measurement and monitoring into clinical practice is becoming a vital component to personalize treatment as detailed above. Newly introduced burden of illness measures incorporating symptom severity, functioning, and QOL, such as the Individual Burden of Illness Index for Depression (IBI-D) (45), represent measurement methodologies that may provide more clinically relevant information.

In summary, increased emphasis should be placed on functional outcomes such as QOL, as important, and perhaps the ultimate, indicators of successful treatment (24–27).

Limitations and Strengths

Our study has a number of limitations, some are related to the STAR*D study and some are related to our own analysis. The lack of data on patients who dropped out could have potentially provided useful information about their QOL. Younger patients, African-Americans, those with lower education, and individuals with lower income were shown to be more likely to drop out of the STAR*D study (46,47). Medical predictors of attrition included higher side effects and a higher number of Axis I comorbidities. Previous analyses showed that attrition in the first two steps of the STAR*D study was in the vast majority of cases motivated by non-medical reasons; 92% and 90% respectively (47, 48). Attrition makes it difficult to generalize the conclusions from the sample studied. In the future, it would be important to analyze dropout data in order help us better understand the nature of these patients' struggles. The lack of a control group in the STAR*D study, deprived us from useful comparative data. Another limitation involves the challenge of translating the

above research findings into clinical practice. Administering QOL measures, and acting on their findings, must be balanced against the time-constraining realities of modern practice, however QOL improvement is becoming an established treatment goal in many areas of medicine such as ophthalmology (49) and cardiology (50).

The reliance on self-report raises questions about magnification or minimization of ratings, however patient reported outcomes (PRO) using valid and reliable instruments, such as the ones used in STAR*D, is a growing movement in healthcare and is widely supported by NIH PROMIS, WHO, and the FDA PRO initiatives, as well as clinicians and researchers alike. In this analysis we described QOL using both continuous and categorical approaches. A number of authors had criticized categorizing continuous variables (51, 52). We first examined continuous data to detect changes in depressive symptom severity and QOL using statistical significance parameters with effect sizes, and then we examined two categorical variables derived from QOL scores. Although one could never ascertain pre-morbid QOL, we acted on feedback from patients concerning their need for “normalization” of functional outcomes (15). Therefore, we categorized both variables ‘within-normal QOL’ and ‘severely-impaired’ QOL based on parameters identified in previously published research work (3, 19), similar to when depressive symptoms are categorized as “remission” or “response” according to a cutoff score. Another limitation concerns the fact that our study is a post hoc analysis; therefore the study findings should be considered hypothesis-generating and would need to be replicated in prospective randomized placebo-controlled clinical trials. A possible additional limitation of the study concerns the possible paradoxical impact of pharmacological interventions on QOL. Although antidepressants and other drugs are generally safe and well tolerated, the adverse effects associated with medications could negatively impact QOL and thus mitigate their otherwise positive overall effect (53). Additionally, although follow-up patients were strongly encouraged to continue their effective medications, one could not be absolutely sure that the patients completely followed this directive, especially in the absence of medication-level monitoring in this study.

Ethical considerations of clinicians making judgments about patients’ QOL to guide provision of services have long been debated in medicine (54). Moreover, administering questionnaires that might add to the emotional burden of depressed patients recognizing the magnitude of their QOL deficits, have also been debated from an ethical perspective (55).

One of the strengths of the present study is that it distinctly details pre and post-treatment and 12-months follow-up QOL data from a large population of treatment-seeking MDD patients. “Statistically significant" findings, often reported in the literature as indicated by *p* values, which do not adequately inform the reader about the relevance to the findings observed in daily practice or research settings (56), therefore we included the calculation of effect sizes as indicated by Cohen’s *d* (57). An additional strength is the fact that this population of treatment-seeking MDD patients, recruited from primary care and psychiatry specialty clinics, is representative of what clinicians see in outpatient settings. The findings can be extrapolated to everyday practice, with the one caveat that the majority of patients are Caucasians, which limits the applicability of this analysis to ethnic groups such as African-American, Hispanic, Asian, or Native-American patients. Future research effort to study QOL in minority groups is critically needed.

CONCLUSION

The present analysis highlights the major pitfalls associated with MDD treatments that are purely symptom-focused. Such treatments can give the misleading impression that a patient has recovered, when in fact the patient continues to experience ongoing deficits in QOL. QOL did not improve further after the acute treatment phase even in remitters, and non-remitters showed a statistically significant decline at follow-up after one year. Consequently, clinicians and researchers need to move beyond the mere assessment of symptoms when treating and/or researching MDD, by incorporating QOL measurement, and by investigating specific and personalized interventions to ameliorate QOL.

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Significant Outcomes

- An analysis of 2,280 adult Major depressive disorder patients showed extensive and statistically significant decreased quality of life prior to treatment.
- Treatment had a statistically significant positive impact on quality of life. Nevertheless a majority of patients continue to experience quality of life deficits
- Quality of life scores declined after 12 months, as did the proportion of overall patients experiencing ‘within-normal’ scores.

Limitations

- The study lacked a placebo arm, and this post hoc analysis relied on self-reported outcomes.
- Possible paradoxical impact of pharmacological interventions on quality of life cannot be excluded.

Table 1

Demographic and Baseline Characteristics of the STAR*D Analyzed Sample with Major Depressive Disorder (MDD)

STAR*D Subjects with Complete QOL and Symptom Severity Data Number of Subjects=2,280	
Age range	18.1 – 75.6
Demographics: n (%)	
	2,280 (100%)
Mean Age (SD)	42.6 (13.0)
Female	1,432 (62.8%)
Caucasian	1,846 (80.9%)
Hispanic	239 (10.5%)
College Graduate	686 (30.1%)
Employed	1301 (57.1%)
Living with Spouse/Partner	1046 (45.9%)
Baseline Measures: Mean (SD)	
QOL (Q-LES-Q)	41.5 (14.2)
MDD Symptom Severity (QIDS-SR)	15.4 (5.0)

Abbreviations

QIDS-SR = Quick Inventory of Depressive Symptomatology-Self Report

Q-LES-Q = Quality of Life measure: Quality of Life, Enjoyment, and Satisfaction Questionnaire – Short Form

Table 2

Mean and SD of Measures of depressive symptom severity (QIDS-SR), and quality of life (Q-LES-Q), with Mean (SD) of Change, and Effect Sizes or ES (Dunlap corrected)

Level*	*N*	QIDS-SR				Q-LES-Q			
		Entry Mean (SD)	Exit Mean (SD)	Change Mean (SD)	*p* (ES)	Entry Mean (SD)	Exit Mean (SD)	Change Mean (SD)	*p* (ES)
1	2,280	15.4 (4.8)	9.5 (6.5)	−6.1 (6.5)	< 0.001 (1.05)	41.5 (14.2)	56.6 (21.9)	15 1 (19.4)	< 0.001 (0.78)
2	749	14.3 (4.7)	10.5 (6.5)	−3.8 (5.8)	< 0.001 (0.65)	42.1 (15.5)	51.5 (20.1)	9.5 (17.5)	0.001 (0.52)
3	190	15.5 (4.8)	13.1 (6.3)	−2.4 (5.6)	< 0.001 (0.42)	38.8 (14.7)	42.2 (18.1)	3.4 (15.2)	0.002 (0.20)
4	56	16.4 (4.6)	12.3 (6.5)	−4.1 (6.3)	< 0.001 (0.71)	36.8 (14.3)	44.0 (19.4)	7.2 (15.6)	0.001 (0.41)
12-m. f/u	414	5.6 (3.7)	7.7 (5.7)	2.2 (5.1)	< 0.001 (0.43)	67.1 (17.8)	59.7 (20.6)	−7.4 (16.1)	< 0.001 (−0.38)

P values are considered significant at 0.01 or less (Bonferroni-adjusted), Effect sizes are Dunlap corrected for correlated designs (Dunlap et al., 1996).

*Values compared between entry and exit at each level and between entry to follow-up and exit at 12 months of f/u.

STAR*D Levels:
Level 1: Citalopram monotherapy
Level 2: Switching to sertraline, bupropion SR, venlafaxine XR, or CBT OR Augmenting with bupropion SR, buspirone, or CBT
Level 3: Switching to nortriptyline or mirtazapine OR Augmenting with lithium or T3
Level 4: Switching to tranylcypromine OR Switching to venlafaxine XR + mirtazapine

Abbreviations: QIDS-SR = Quick Inventory of Depressive Symptomatology-Self Report, Q-LES-Q = Quality of Life measure: Quality of Life, Enjoyment, and Satisfaction Questionnaire – Short Form

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Table 3

Proportions of Patients scoring at 'Within-Normal' and 'Severely-Impaired' Quality of Life at Entry and Exit from each Level and F/U.

Level*	*N*	'Within-Normal QOL'			'Severely Impaired' QOL		
		Entry (%)	Exit (%)	McNemar Tes *p* value	Entry (%)	Exit (%)	McNemar Test *p* value
1	2,280	1.7	29.1	< 0.001	85.6	50.5	< 0.001
2	749	2.9	19.5	< 0.001	83.3	59.5	< 0.001
3	190	1.6	7.9	0.008	89.5	81.1	0.023
4	56	1.8	8.9	0.220	91.1	69.6	0.004
12-m. f/u	414	46.6	31.6	< 0.001	28.5	42.5	< 0.001

P values are considered significant at 0.01 or less (Bonferroni-adjusted).

*Values compared between entry and exit at each level and between entry to follow-up and exit at 12 months of f/u.

QOL 'Within-Normal' is defined as Q-LES-Q scores within 10% of community norms. Since community norm samples have an average Q-LES-Q of 78.3 (SD=11.3), a Q-LES-Q>=70.47 is considered 'within-normal' (Endicott et al., 1993, Rapaport et al., 2005, and Schechter et al., 2007). Severe Impairment in QOL is defined as Q-LES-Q scores greater than 2 SD below the community norms. Since community norm samples have an average Q-LES-Q of 78.3 (SD=11.3), a Q-LES-Q=<55.7 is considered 'severely-impaired' (Endicott et al., 1993, Rapaport et al., 2005, and Schechter et al., 2007).

STAR*D Levels:
Level 1: Citalopram monotherapy
Level 2: Switching to sertraline, bupropion SR, venlafaxine XR, or CBT OR Augmenting with bupropion SR, buspirone, or CBT
Level 3: Switching to nortriptyline or mirtazapine OR Augmenting with lithium or T3
Level 4: Switching to tranylcypromine OR Switching to venlafaxine XR + mirtazapine

Abbreviations: Q-LES-Q = Quality of Life measure: Quality of Life, Enjoyment, and Satisfaction Questionnaire – Short Form

Table 4

Proportions of Remitters/Non-Remitters at 'Within-Normal and 'Severely Impaired' Quality of Life at Entry/Exit from each Level and Follow-up.

	Remitters				Non-Remitters				Difference at Exit
Level	***N***	**'Within-Normal' QOL Entry (%)**	**'Within-Normal' QOL Exit (%)**	**McNemar Test *p* value**	***N***	**'Within-Normal' QOL Entry (%)**	**'Within-Normal' QOL Exit (%)**	**McNemar Test *p* value**	**Chi-Square or Fisher Test p value**
1	812	3.0	68.0	< 0.001	1,468	1.0	7.6	< 0.001	< 0.001
2	208	5.8	52.4	< 0.001	541	1.8	6.8	< 0.001	< 0.001
3	30	0	40.0	< 0.001	160	1.9	1.9	n/a	< 0.001*
4	8	0	25.0	0.500	48	2.1	6.3	0.630	0.144*
12-mo. f/u	193	63.4	58.8	0.260	221	31.8	7.7	< 0.001	< 0.001
Level	***N***	**'Severely-Impaired' QOL Base (%)**	**'Severely-Impaired' QOL Exit (%)**	**McNemar Test *p* value**	***N***	**'Severely-Impaired' QOL Base (%)**	**'Severely-Impaired' QOL Exit (%)**	**McNemar Test *p* value**	**Chi-Square or Fisher Test p value**
1	812	79.3	9.0	< 0.001	1,468	89.0	73.4	< 0.001	< 0.001
2	208	74.5	16.3	< 0.001	541	86.7	76.2	< 0.001	< 0.001
3	30	83.3	43.3	0.004	160	90.6	88.1	0 570	< 0.001*
4	8	87.5	25	0.063	48	91.7	77.1	0.065	0.007*
12-mo. f/u	193	14.4	13.4	0.860	221	40.9	68.2	< 0.001	< 0.001

P values are considered significant at 0.01 or less (Bonferroni-adjusted).

*Fisher exact test used due to small sample size

QOL 'Within-Normal' is defined as Q-LES-Q scores within 10% of community norms. Since community norm samples have an average Q-LES-Q of 78.3 (SD=11.3), a Q-LES-Q>=70.47 is considered 'within-normal' (Endicott et al., 1993, Rapaport et al., 2005, and Schechter et al., 2007). Severe Impairment in QOL is defined as Q-LES-Q scores greater than 2 SD below the community norms. Since community norm samples have an average Q-LES-Q of 78.3 (SD=11.3), a Q-LES-Q=<55.7 is considered 'severely-impaired' (Endicott et al., 1993, Rapaport et al., 2005, and Schechter et al., 2007).

STAR*D Levels:
Level 1: Citalopram monotherapy
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Level 3: Switching to nortriptyline or mirtazapine OR Augmenting with lithium or T3
Level 4: Switching to tranylcypromine OR Switching to venlafaxine XR + mirtazapine

Abbreviations: f/u = Follow-up; Q-LES-Q = Quality of Life measure: Quality of Life, Enjoyment, and Satisfaction Questionnaire – Short Form

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Impact of depression on quality-adjusted life expectancy (QALE) directly as well as indirectly through suicide

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Abstract

Purpose—To estimate quality-adjusted life expectancy (QALE) loss among US adults due to depression and QALE losses associated with the increased risk of suicide attributable to depression.

Method—We ascertained depressive symptoms using the eight-item Patient Health Questionnaire (PHQ-8) on the 2006, 2008, and 2010 Behavioral Risk Factor Surveillance System (BRFSS) surveys. We estimated health-related quality of life (HRQOL) scores from BRFSS data (n = 276,442) and constructed life tables from US Compressed Mortality Files to calculate QALE by depression status. QALE loss due to depression is the difference in QALE between depressed and non-depressed adults. QALE loss associated with suicide deaths is the difference between QALE from only those deaths that did not have suicide recorded on the death certificate and QALE from all deaths including those with a suicide recorded on the death certificate.

Results—At age 18, QALE was 28.0 more years for depressed adults and 56.8 more years for non-depressed adults, a 28.9-year QALE loss due to depression. For depressed adults, only 0.41 years of QALE loss resulted from deaths by suicide, and only 0.26 years of this loss could be attributed to depression.

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Conflict of interest The authors declare that they have no conflict of interest.

Conclusion—Depression symptoms lead to a significant burden of disease from both mortality and morbidity as assessed by QALE loss. The 28.9-year QALE loss at age 18 associated with depression markedly exceeds estimates reported elsewhere for stroke (12.4-year loss), heart disease (10.3-year loss), diabetes mellitus (11.1-year loss), hypertension (6.3-year loss), asthma (7.0-year loss), smoking (11.0-year loss), and physical inactivity (8.0-year loss).

Keywords

Depression; Suicide; Health-related quality of life (HRQOL); Quality-adjusted life expectancy (QALE); Life expectancy

Introduction

Depression can include several symptoms associated with cognition, negative affect, anxiety, and somatization and can present in individuals in various ways including brief symptoms that often resolve on their own or frequently recurring symptoms that can lead to chronic debilitating mental illness [1]. The prevalence for one kind of chronic depression, major depression, is relatively consistent across large nationally representative surveys: 6.7 % in the past 12 months and 16.6 % over a lifetime [2]. When symptoms that may indicate depression occur within the past 2 weeks, the prevalence of major depression ranges from 3.0 to 3.5 % [3]. When any such symptoms occur within the last 2 weeks, including major depression as well as episodic depression, the prevalence of depression ranges from 7 to 9 % [3].

Depression is a risk factor for many chronic conditions such as cardiovascular diseases and neurological disorders and is associated with risky behaviors such as drug, tobacco, and alcohol abuse [4–7]. Depression is also associated with poor health-related quality of life (HRQOL) and increases the number of years of life lived with disabilities [8, 9]. Depression can be life threatening and has been associated with excess mortality and substantially lower life expectancy [10, 11]. In a longitudinal study of elderly individuals followed up to 48 months, individuals diagnosed with major depression were twice as likely to die as those without depression [12]. Although this increased mortality risk may be indirectly caused by chronic conditions including diabetes and obesity and risky behaviors such as alcohol and drug use, depression alone is likely to be directly responsible through suicide for a proportion of its increased mortality risk [13, 14]. Most individuals who commit suicide have psychiatric illnesses [15]. In a systematic review of risk factors associated with suicide among depressed individuals, many of the most important risk factors included symptoms and conditions associated with depression such as more severe depression (OR = 2.20), hopelessness (2.20), anxiety (OR = 1.59), and the misuse of alcohol and drugs (OR = 2.17) [16]. In one longitudinal study, 8 % of individuals with a major depressive disorder attempted suicide over an 18-month period [17]. However, these studies have many methodological weaknesses that include less representative samples of older patients in clinical settings with multiple chronic conditions, especially those with serious mental illness [12, 17]. Estimates are lacking of the long-term health consequences and losses among representative samples of individuals with depression compared to individuals without depression across their entire life spans as well as comparisons of health losses for

those with depression compared to those with other chronic conditions. The magnitude of the impact of depression on suicide and the number of years of life lost due to the increased risk of suicide among those with depression are also unknown [13, 17].

Much of the lifetime burden of disease of depression is associated with the early age of onset of depression. In the National Comorbidity Survey (NCS), the median ages of onset for major depression, dysthymia, and bipolar disorders were 32, 31, and 25 years, respectively [2, 18], significantly younger than the ages of onset for most other chronic conditions such as heart disease and diabetes. Several different methods are available to assess the lifetime burden of disease for a condition such as the years lived with a disability (YLDs), disability-adjusted life years (DALYs), and quality-adjusted life years (QALYs) [19]. In the Global Burden of Disease Study that estimated YLDs worldwide for all infectious and chronic disease conditions, depression was the second leading cause of YLDs [8, 9]. Furthermore, when major depression is combined with other psychiatric conditions that include significant depressive symptoms (e.g., dysthymia and bipolar disorder), this combined estimate for depression is the leading health condition worldwide in terms of DALYs and YLDs [20].

QALYs and an associated measure, quality-adjusted life expectancy (QALE), take into account both the years of life lost and the relative severity of disease, making it possible to quantify the total health losses of both non-fatal and fatal mortality outcomes for affected patients or a target population [19, 21–23]. The burden of disease for non-fatal outcomes for QALYs and QALEs use preference-based HRQOL measures to assess both how a person perceives her/his health and how much that person values one health state versus another state. Preference-based HRQOL measures capture respondents' health states using a summary score anchored at 0 (dead) and 1 (perfect health) [19]. Thus, 1 year of life lived at a health state valued at 0.5 is assessed as 0.5 quality-adjusted life years (QALYs), the same as only a half year of life lived in perfect health [21, 22]. QALE at a certain age is defined and calculated as the average number of QALYs throughout the remainder of expected life [21, 22]. One advantage of QALE over DALY or YLD is that QALE uses the health state value to weight life years, so that calculating QALE loss due to depression could be useful for evaluating the economic cost of depression and for analyzing the cost-effectiveness of treatments and interventions [19, 21–23].

The first aim of this study is to estimate QALE losses due to depression for US adults and to compare such losses due to depression with previously reported losses due to five other common chronic conditions (stroke, heart disease, diabetes mellitus, hypertension, and asthma) and two significantly harmful health behaviors, smoking and physical inactivity. The second aim of this study is to estimate QALE loss due to increased risk of suicide death attributable to depression. This is the first study we are aware of to estimate QALE losses due to depression as well as losses due to increased risk of suicide death attributable to depression.

Materials and methods

We calculated QALE loss due to depression in four steps. First, using data from the Behavioral Risk Factor Surveillance System (BRFSS), we calculated HRQOL values as a function of age and depression outcome. Second, we estimated age-specific mortality rates stratified by depression status using the Compressed Mortality File. Third, using the estimated age-specific mortality rates from step 2, we constructed life tables to calculate life expectancy as a function of depression and estimate years of life lost due to depression. Fourth, we calculated QALE by combining estimated HRQOL values from step 1 and life tables from step 3. We calculated QALE by depression outcome and estimated QALE loss due to depression.

Sample

The Behavioral Risk Factor Surveillance System (BRFSS), a state-based annual health survey of non-institutionalized civilian US residents, uses random-digit-dialed telephone survey methods to ascertain sociodemographic characteristics, behavioral risk factors, and health outcomes in a population-based random sample of adults 18 years or older [24–26].

BRFSS has included the eight-item Patient Health Questionnaire (PHQ-8) depression scale as an optional module to estimate depressive symptoms and depression status during 2006, 2008, and 2010 [27]. The PHQ-8 is a valid diagnostic and severity measure for depressive disorders in large clinical studies [28] and for estimating depression prevalence [3, 27, 29]. Thirty-six States and the District of Columbia administered the PHQ-8 at least once during these three survey years, yielding a total sample size of 276,442. Current depression in this study is defined as PHQ-8 index ≥10 [27]. The PHQ-8 score of ≥10 has 88 % sensitivity and 88 % specificity for major depression and represents clinically significant depressive symptoms [4, 28, 30].

The BRFSS includes information on respondent sociodemographic characteristics, risky behaviors, and certain diseases related to current depression. We included these variables in analyses of the depression outcome to assess potential associations with these variables. The sociodemographic characteristics analyzed in this study included age, sex, race/ethnicity, marital status, and educational achievement. The risky behaviors included were weight differences from normal weight based on the body mass index (BMI)—underweight (BMI < 18.5 kg/m^2), overweight (25 ≤ BMI <30 kg/m^2), and obese (BMI ≥ 30.0 kg/m^2); current cigarette smoking (respondents who report both having smoked at least 100 cigarettes in their lifetimes and currently smoke); physical inactivity (respondents who report doing no physical activity or exercise during the past 30 days other than that for their regular job); and heavy alcohol drinking (men who report having three or more alcoholic drinks per day and women who report having two or more alcoholic drinks per day). We also assessed associations with cardiovascular-related diseases [had either a heart attack (myocardial infarction), angina or coronary heart disease, or a stroke].

Non-fatal health loss due to depression

Non-fatal health loss due to depression was defined and calculated as the decrease in HRQOL scores for those with current depression compared to those without current depression. The BRFSS questionnaire includes a set of four HRQOL questions that asks respondents to report their general health status (excellent, very good, good, fair, or poor) and the numbers of physically unhealthy days, mentally unhealthy days, and days with activity limitation during the past 30 days [31]. We applied a published mapping algorithm to obtain values of EuroQol Group's EQ-5D index, a preference-based HRQOL measurement, from the four BRFSS HRQOL items [32, 33]. This algorithm provides valid estimates of EQ-5D scores with a relative bias of less than 1 % of the actual observed EQ-5D [33].

We calculated mean EQ-5D, standardized to the year 2010 US population, for those with current depression and those without current depression, and then estimated the difference in age-adjusted EQ-5D between those with current depression and those without current depression as the non-fatal health loss due to depression.

Fatal health loss due to depression

Fatal health loss due to depression was defined as years of life lost due to depression and was operationalized as the difference in life expectancy between those with current depression and those without current depression [34]. Life expectancy at a given age is the expected/average number of years of life remaining starting at that age and is calculated from age-specific mortality rates [35, 36]. The National Center for Health Statistics compiles death data for the US population from death certificates and makes these data available to the public in the Compressed Mortality File at http://wonder.cdc.gov. The US Census Bureau provides annual population estimates (accessible at www.census.gov/popest/states/asrh/). Both sets of data include age, gender, and other basic demographics, and can be used to estimate age-specific mortality rates for the US population overall, by sex, and by some race/ethnicity subgroups.

Because age-specific mortality rates stratified by depression status are not available, these rates were estimated from three variables—age-specific mortality rates of total population, the proportion of the population with depression, and the hazard ratio of death for those with depression relative to those without depression [37]. We estimated the proportion of the population with depression from the BRFSS and the hazard ratios from the 1999–2004 National Health and Nutrition Examination Survey (NHANES) data as linked to the National Death Index through December 31, 2006 (http://www.cdc.gov/nchs/data_access/data_linkage/mortality/nhanes_99_04_ linkage.htm).

QALE loss due to depression

Like life expectancy, quality-adjusted life expectancy (QALE) at a certain age is the expected/average number of quality-adjusted life years (QALYs) remaining starting at that age and is calculated from age-specific mortality rates and corresponding average HRQOL scores [23, 36]. We constructed life tables to calculate life expectancy and QALE using the age-specific mortality rates and EQ-5D scores. For each year age interval (18–24, 25–34,…,

85 +), we obtained the mortality rates (per year per person) by dividing the numbers of deaths in that age interval by the number of persons in that age interval in the population. We assumed a constant probability of death during each age interval and could thus obtain estimated years of life within the interval [35, 36]. We calculated the QALYs during each age interval by multiplying the life-years within an interval by the corresponding mean EQ-5D value. Life expectancy and QALE for those at a certain age (such as 18 years old) are the average life years and QALYs starting from this age to the last age interval, respectively.

We used the estimated age-specific mortality rates and EQ-5D scores, stratified by depression status, to construct depression-specific life tables and to calculate QALE by respondents' depression status. Similar to years of life lost due to depression, QALE loss due to depression was defined and estimated as the difference in QALE between those with current depression and those without current depression [37, 38].

QALE loss due to increased risk of suicide death

Suicide deaths are a subset of deaths from all causes. Suicide-associated QALE loss is defined as the impact on QALE due to additional deaths through suicide. This does not include losses due to non-fatal suicide attempts. We calculated this loss as the difference between the QALE from using only those deaths that did not have suicide recorded on the death certificate and the QALE from using all deaths including those with a suicide recorded. Because the risk of suicide is higher among those with depression than among those without depression, we estimated the additional QALE loss due to this increased risk of suicide death attributable to depression as the difference in the suicide-associated QALE loss between those with and those without depression.

Ethics

This analysis used de-identified data produced by federal agencies in the public domain. Data were downloaded from the Centers for Disease Control and Prevention website (ftp://cdc.gov/pub).

Results

We first report our descriptive results (Table 1). Approximately, 9.1 % of US adults were currently depressed based on responses to the PHQ-8. The prevalence of current depression was higher among adults 18–64 years old than older adults. After age adjustment, the prevalence of depression was statistically associated with sex, race/ethnicity, marital status, and education. Specifically, the prevalence of depression was higher among women than men; black non-Hispanics than other race/ethnicity groups; divorced, separated, or never married adults than married, widowed, or unmarried cohabiting adults; and adults with less education than those with more education. Current depression was also more common among those who were underweight or obese, current cigarette smokers, physically inactive, and heavy alcohol drinkers. Those who had cardiovascular diseases were more than twice (20.1 %) as likely to be currently depressed as those who did not have cardiovascular

disease (8.0 %). Nearly half (45.6 %) of adults who reported “poor” general health and 22.1 % of adults who reported “fair” general health were currently depressed.

We also observed gender differences in the magnitude of associations between some of these predictors and current depression. For example, compared to women with depression, men with depression were more likely to have cardiovascular diseases (age-adjusted OR = 1.6), to be heavy drinkers (OR = 2.1), to be current smokers (OR = 1.3), and to be divorced, separated, or never married (OR = 1.2).

We now report our analytic results (Tables 2, 3, 4). For those with depression, the age-adjusted EQ-5D index was 0.598, 0.307 points (34 %) lower than those without depression (0.905) (Table 2). Across subgroups defined by age, sex, race/ethnicity, and simultaneously by race and sex, those who were depressed had consistently lower EQ-5D scores than those who were not depressed. This adverse impact of depression on the EQ-5D index was significantly larger for those 65 years old or older (0.509 points lower) than those 18–44 years old (0.213 points lower) or those 45–64 years old (0.413 points lower); larger for men (0.327 points lower) than women (0.304 points lower); and larger for white non-Hispanics (0.337 points lower) than black non-Hispanics (0.266 points lower) and Hispanics (0.229 points lower).

The life expectancy at age 18 years was 47.3 more years for those with depression and 63.7 more years for those without depression. This 16.4-year (26 %) decrease represents the years of life lost due to depression, starting at age 18. The loss in life expectancy at age 18 for men with depression was 18.2 years, significantly more than the 15.3 years of life lost for women with depression ($p < 0.0001$). Although the decreases in EQ-5D index were larger for white non-Hispanics than for other groups, the losses in life expectancy due to depression were significantly less for white non-Hispanics (16.1 years) than for black non-Hispanics (18.5 years) and for Hispanics (18.0 years).

The lower EQ-5D and life expectancy among those with depression yield a significantly lower QALE among those with depression (Table 3). The QALE for an 18-year-old with depression, for example, was 28.0 years, 28.9 years less than that of an 18-year-old without depression (56.8 years). This represents a decrease of QALE by more than half (51 %) for those with depression. Although QALE declined with age, depression-associated QALE losses were significant at all ages. For example, an 85-year-old person with depression had a significantly lower QALE (0.9 year) than an 85-year-old person without depression (6.9 years), a 6.0-year loss in QALE. The depression-associated QALE loss at age 18 was significantly larger among men (29.6-year loss) than among women (28.6-year loss) and larger among white non-Hispanics (29.3-year loss) than among black non-Hispanics (26.8 years) and among Hispanics (26.4-year loss), though this difference between white non-Hispanics and Hispanics was not statistically significant ($p = 0.1$).

The second aim of this study estimated suicide-associated QALE loss (Table 4). For those with depression, the calculated QALE at age 18 using non-suicide mortality rates was 28.38 years, 0.41 years more than that using mortality rates including suicides (27.97 years). Thus, death by suicide contributed 0.41 years of QALE loss for those with depression. Similarly,

death by suicide contributed only 0.15 years of QALE loss for those without depression. This 0.26-year difference (0.26 = 0.41–0.15) was the additional QALE loss associated with the increased risk for suicide among those with depression. Men lost more QALE to suicide death than women did, both for those with depression and those without depression. The additional QALE loss for men with depression due to their increased risk of death through suicide was 0.55 years, more than threefold that of the 0.14-year additional loss for women with depression.

Finally, we conducted a sensitivity analysis to examine the impact of suicide misclassification within death certificates on the QALE loss due to suicide. We included all unknown accident deaths as suicide deaths (i.e., new suicides = recorded suicides + unknown accident deaths) and recalculated the QALE loss due to suicide. The new calculated value of the additional QALE loss associated with the increased risk for suicide among depressed adults increased from 0.26 years to 0.29 years of QALE loss.

Discussion

These analyses confirmed previous studies suggesting large adverse impacts of depression on both fatal and non-fatal outcomes [4, 13, 39]. The estimated burden of disease for depression for depressed individuals during their entire life span starting at age 18 was 28.9 years of QALE loss, a loss of more than half their QALE at this age. This result is consistent with previous studies that have shown a dramatic decrease in life expectancy for those with serious mental illnesses [40, 41]. This 28.9-year loss in QALE also markedly exceeds that of other chronic conditions such as stroke (12.4-year loss), heart disease (10.3-year loss), diabetes mellitus (11.1-year loss), hypertension (6.3-year loss), and asthma (7.0-year loss), and the risk factors such as smoking (11.0-year loss) and physical inactivity (8.0-year loss) reported previously (Fig. 1) [22, 37, 42]. This QALE loss also mirrors other studies concluding that depression is the top health condition worldwide in terms of disability-adjusted life years (DALYs) [20]. At least three reasons may explain this excessive QALE loss. First, the non-fatal health losses due to depression appear significantly larger than the loss due to each of the other chronic conditions mentioned previously. Major depressive disorder contributed 917 years lived with a disability (YLDs) per 100,000 persons annually, more than those of these five other chronic conditions mentioned above combined (821 YLDs per 100,000) [9]. In our study, depression decreased the EQ-5D index by 0.307 points, equivalent to a decrease in the EQ-5D index from having no chronic conditions to having between five and six chronic conditions [43] and significantly more than the 0.07–0.16 point decrease associated with any of the five other conditions and the two risky behaviors [22, 37, 42]. Second, depression affected mortality and life expectancy more than the other conditions. People with serious mental illness, which includes clinical depression, died an average of 25 years sooner than those in the general population [44]. In this study, depression decreased life expectancy at age 18 by 16.4 years, significantly more than that of the other five chronic conditions [22] and two risky behaviors [37, 42], which ranged from 3.1 years (hypertension) to 9.8 years (stroke). Third, much of the lifetime burden of disease associated with depression is based on its early age of onset. The median ages of onset for major depression (32 years), dysthymia (31 years), and bipolar disorders (25 years) are significantly younger than those for most other chronic conditions such as heart disease and

diabetes mellitus [2]. For example, about 75 % of heart disease and 84 % of stroke occur first after age 55 [22]. In this study, the depression prevalence was significantly higher among younger persons (9.8 % for those < 65 years) than older persons (5.3 % for those ≥65 years).

Although age-adjusted depression prevalence rates in women exceeded those in men, the QALE losses associated with depression were one year more in men than in women. This difference in QALE losses between men and women resulted from the difference in the impacts on both fatal and nonfatal outcomes. Men lost significantly more years of life and experienced larger EQ-5D losses to depression than women. Compared to women with depression, men with depression were more likely to have cardiovascular diseases, to be heavy drinkers, to be current smokers, and to be divorced, separated, or never married. All of these factors are associated with poor health outcomes. Depression also has a much large impact on mortality among men than women [13, 45, 46]. Among three race/ ethnicity subgroups in our study, depression decreased the EQ-5D index more but decreased life expectancy less in white non-Hispanics than in black non-Hispanics and Hispanics, though the combined QALE loss among white non-Hispanics (28.6-year loss) significantly exceeded that among black non-Hispanics (25.8-year loss).

Our descriptive analyses of depression confirmed previous studies of associations between depression and some sociodemographic characteristics, risky behaviors, and diseases [4–7, 13, 39]. Although these variables are potential confounders for the decreased QALE among depressed individuals, our QALE estimates were not adjusted for these factors. Therefore, the term “QALE loss due to depression” does not suggest a causal relationship. However, our estimated QALE loss due to depression markedly exceeds that of diseases associated with depression, such as heart diseases and stroke, and risky behaviors, such as smoking and physical inactivity [22, 37, 42]. In addition, our study used similar methods to these previous studies and is consistent with currently accepted methods in the literature. These findings strongly suggest that depression contributes lower QALE among individuals with depression independent of these diseases and risk factors.

Depression may be directly related to the increased risk of death through suicide [13, 14] because a large proportion of persons who committed suicide had pre-existing depression [1, 47]. Nonetheless, in this study, suicide contributed very little to QALE loss for both those with depression (0.41 years) and those without depression (0.15 years). Only 0.26 years of additional QALE losses for those with depression could be attributed to their increased risk of suicide. This 0.26 years of QALE loss was much smaller than the nearly 30 years of overall QALE loss due to depression: Only 0.9 % (1.8 % for men and 0.5 % of for women) of the depression-associated QALE loss was due to the increased risk of suicide among those with depression. This most likely results from the fact that, although many who die from suicide suffer from mental disorders [48], almost all of those individuals diagnosed with a mental disorder including those with clinical depression do not die directly from suicide but from other causes [3, 13, 49]. Only 1.4 % (2.3 % for men and 0.58 % for women) of all deaths among US adults had an underlying cause of suicide, even though suicide is the second leading cause of death among those aged 15–24 years [1, 50]. Related to this, depression usually is associated with inactivity, lethargy, and a general decline in

health practices and self-care which puts those with depression at higher risk for other chronic conditions [47]. Because the Compressed Mortality File, compiled from death certificates, might underreport suicides and misclassify some suicide deaths as unknown deaths from injuries [51, 52], this study may have underestimated the impact of suicide on QALE loss. However, our sensitivity analysis showed that even attributing all unknown deaths from injuries as suicide deaths increased the estimated additional QALE loss associated with the increased risk for suicide among those with depression only 0.03 years, from 0.26 years to 0.29 years.

This study has several weaknesses. First, the PHQ-8 is not a clinical diagnostic tool for diagnosing depression but has been used primarily as a screening instrument for estimating the prevalence of depression in the general population. This would tend to reduce the accuracy and the reliability of the population estimates relative to a clinical diagnosis or interview. Second, the reporting of depressive symptoms might show mode effects that may have affected our estimates; individuals administered face-to-face interviews tend to report better health (social desirability effects) than those interviewed by telephone [3, 53]. The estimated prevalence of current depression using the BRFSS, a telephone survey, was higher (9.1 %) than the estimates using the NHANES, an in-person interview (6.8 %) [3]. However, such a higher estimated prevalence for depression would have resulted in a relatively small change in the estimated depression-associated QALE loss. For example, if we had used the estimated depression prevalence from the NHANES (6.8 % overall), the estimated QALE loss due to depression would be 28.6 years, only 0.23 year less than the 28.9 years of the estimated QALE loss based on the estimated 9.1 % overall depression prevalence from the BRFSS. Third, the BRFSS data are collected via telephone interviews using a random-digit-dialed methodology that most likely underestimates the prevalence of depression because the study population includes only non-institutionalized household members. However, our analysis demonstrates that underestimating depression prevalence would have a small effect on the estimation of QALE loss due to depression. Fourth, our estimated hazard ratios from the NHANES linked mortality data exceed others reported in the literature [12, 45], and using larger estimates of these hazard ratios would overestimate depression-associated QALE losses. If we had used the smaller estimated hazard ratio by Sullivan et al. [12] and Zheng et al. [45], the estimated QALE losses would be 26.2 years (28.1 years for men and 25.0 years for women). However, such estimates were not statistically significantly different from the estimated QALE losses in this study. Fifth, this study relies on the BRFSS's unhealthy days questions to estimate preference-based HRQOL scores indirectly rather than on direct measurements of these scores. Therefore, our estimates of QALE loss are likely to be smaller than the true values due to "regression to the mean" [32–37]. One study estimated the bias of estimated QALE loss using the estimated EQ-5D scores and found that this bias was less than 2.5 % of that using the actual EQ-5D questions [36]. Finally, not all the US states used the PHQ-8 questionnaire. Thus, if the prevalence of depression in the states using this questionnaire differed from that in the states not using this questionnaire, these results may not be fully generalizable to the entire US population. However, our analysis above on the small effects of differences in estimated depression prevalence on QALE loss due to depression may mitigate this lack of generalizability.

This study is the first we know of to estimate burden of disease for depression by comparing the QALE for currently depressed persons to that for non-depressed persons. QALE is a single index that encompasses both depression-related fatal and nonfatal outcomes. Therefore, our results are particularly useful in directly comparing the burdens of disease for depression to the burdens of disease for other chronic conditions and risky behaviors and for estimating the economic costs of depression among U.S adults [19–23]. The overall burden of depression was at least twice as large as the burdens of some common chronic conditions such as stroke, heart disease, diabetes mellitus, hypertension, and asthma and of the risk factor of smoking. This information could be useful to local and state authorities when setting health priorities and when dealing with mental problems in the general adult population [54, 55]. These results will also likely to motivate the development of improved prevention efforts and strategies for individuals at risk for depression and suicide [56–58].

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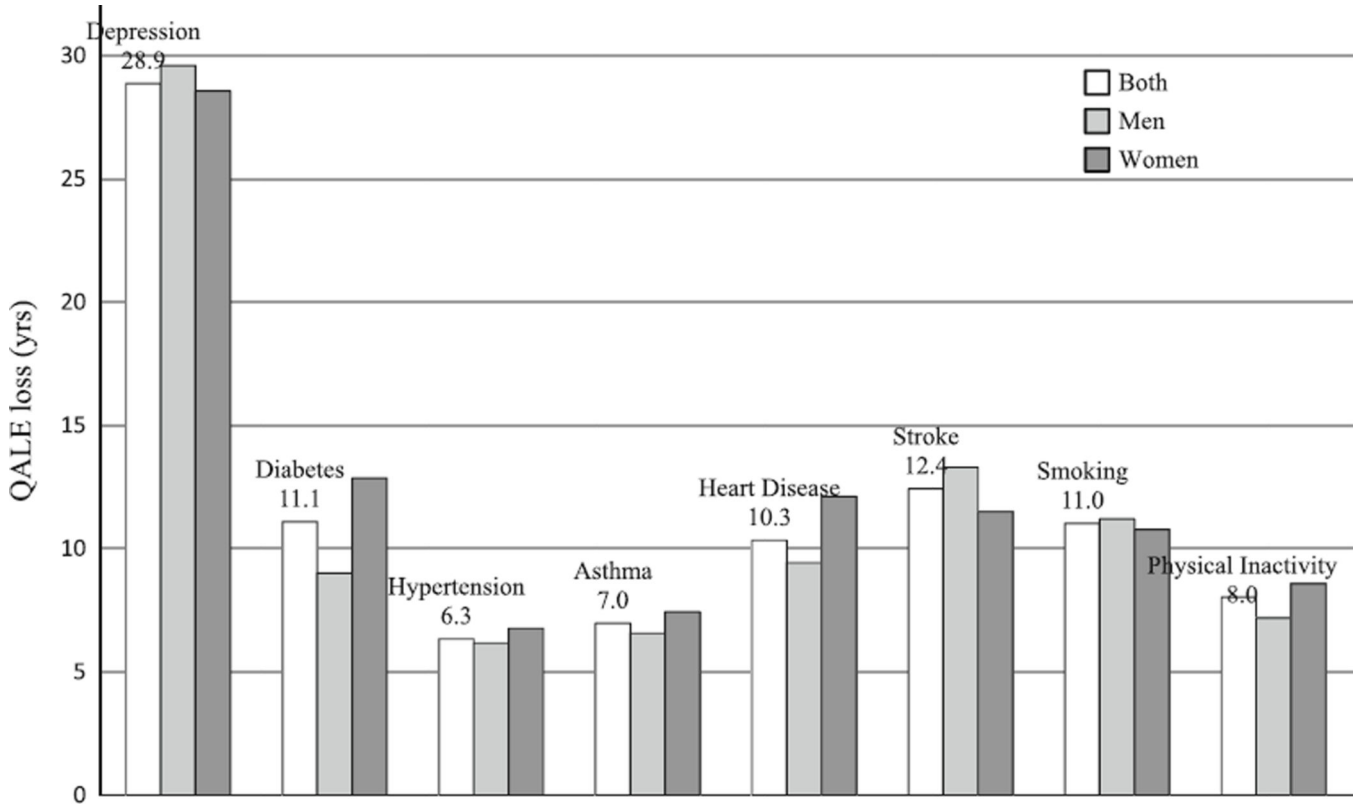

Fig. 1.

Comparison of quality-adjusted life expectancy (QALE) losses due to depression, diabetes mellitus [22], hypertension [22], asthma [22], heart disease [22], stroke [22], smoking [37], and physical inactivity [42]

Table 1

Proportions of Current Depression among US adults by various characteristics

Characteristics	Proportion of current depression		
	N	Percentage[a]	SE (%)
All	276,442	9.1	0.13
Age			
18–44	85,974	9.6	0.21
45–64	116,716	10.0	0.20
65+	73,752	5.3	0.17
Sex			
Men	105,354	7.1	0.44
Women	171,080	11.0	0.44
Race/ethnicity			
White non-Hispanics	217,215	8.6	0.43
Black non-Hispanics	26,234	11.8	0.54
Hispanics	14,505	9.4	0.65
Others	16,526	8.7	0.65
Marital status			
Married/widowed/unmarried couples	196,679	7.2	0.44
Divorced/separated/never married	79,057	13.5	0.46
Education			
<High School	25,306	17.2	0.73
High school/some college	158,346	10.1	0.44
College graduate	92,485	4.6	0.41
Body mass index (BMI) category, (kg/m^2)			
<18.5 (underweight)	4,476	13.4	1.23
18.5 to <25 (normal weight)	93,014	7.4	0.45
25 to <30 (overweight)	96,844	7.6	0.45
≥30 (obese)	72,421	13.2	0.48
Current smoking			
Yes	50,206	17.9	0.54
No	225,337	6.9	0.41
Physical activity			
Yes	207,032	6.6	0.41
No	69,215	17.1	0.56
Heavy alcohol drinking			
Yes	13,443	12.6	0.85
No	258,662	8.9	0.42
Cardiovascular diseases			
Yes	30,246	20.1	0.75
No	244,031	8.0	0.43

Characteristics	Proportion of current depression		
	N	Percentage[a]	SE (%)
Self-rated general health			
Excellent	52,535	2.2	0.43
Very Good	90,222	4.1	0.42
Good	83,350	9.5	0.53
Fair	34,696	22.1	0.72
Poor	14,869	45.6	1.06

SE standard error of estimate

[a]Weighted proportions of depression, for subgroups except age group itself, proportions were adjusted by age

Table 2

Impact of depression on EQ-5D scores and life expectancy (LE)

Characteristics	Not depression		Depression		Difference		Not depression		Depression		Difference	
	HRQOL[a]	SE	HRQOL[a]	SE	Loss[b]	SE	LE at age 18[c]	SE	LE at age 18[d]	SE	LE Loss at age 18[d]	SE
All	0.905	0.001	0 598	0.005	0.307	0.005	63.7	0.05	47.3	0.05	16.4	0.06
By age												
18–44	0.934	0.001	0.721	0.006	0.213	0.006	63.7	0.05	47.3	0.05	16.4	0.06
45–64	0.892	0.001	0.479	0.008	0.413	0.008	38.0	0.05	24.0	0.04	14.0	0.06
65+	0.838	0.002	0 330	0.013	0.509	0.014	20.8	0.05	10.5	0.03	10.3	0.05
By sex												
Men	0.912	0.002	0 585	0.009	0.327	0.010	61.2	0.08	43.0	0.07	18.2	0 10
Women	0.899	0.003	0 595	0.006	0.304	0.006	66.1	0.08	50.8	0.12	15.3	0 17
By race/ethnicity												
White non-Hispanics	0.910	0.003	0 572	0.006	0.337	0.007	63.5	0.05	47.4	0.05	16.1	0.06
Black non-Hispanics	0.894	0.003	0.627	0.011	0.266	0.011	61.1	0.22	42.6	0.10	18.5	0 21
Hispanics	0.890	0.003	0.661	0.015	0.229	0.015	69.2	0.49	51.2	0.18	18.0	0.46
By sex and race/ethnicity												
White non-Hispanic men	0.917	0.003	0 571	0.010	0.346	0.011	61.1	0.08	43.2	0.07	17.9	0 10
White non-Hispanic women	0.903	0.003	0 573	0.007	0.330	0.008	65.8	0.08	50.8	0.12	15.0	0 17
Black non-Hispanic men	0.898	0.002	0.637	0.024	0.261	0.024	57.4	0.27	37.5	0.21	19.9	0 25
Black non-Hispanic women	0.890	0.003	0.623	0.011	0.268	0.011	64.5	0.39	46.6	0.25	18.0	0 52
Hispanic men	0.899	0.004	0.661	0.030	0.238	0.030	66.7	0.60	46.6	0.32	20.1	0 55
Hispanic women	0.882	0.004	0.662	0.015	0.220	0.016	71.7	0.89	54.8	0.52	16.9	1 10

SE standard error of estimate

[a] EQ-5D index, for subgroups except age group itself, age-adjusted EQ-5D index

[b] Decrease in EQ-5D index for those with depression

[c] Life expectancy at age 18 years. For the three ages, life expectancy at age 18, 45, and 65 years, respectively

[d] Life expectancy loss due to depression at age 18 years. For the three ages, life expectancy loss at age 18, 45, and 65 years, respectively

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Table 3

Impact of depression on quality-adjusted life expectancy (QALE)

Characteristics	Not depression		Depression		Difference	
	QALE at age 18[a]	SE	QALE at age 18[a]	SE	QALE loss at age 18[b]	SE
All	56.8	0.08	28.0	0 19	28.9	0.21
At ages						
At 18	56.8	0.08	28.0	0 2	28.9	0.21
At 25	50.5	0.08	22.7	0 2	27.8	0.20
At 35	41.5	0.08	16.1	0 2	25.4	0.19
At 45	32.8	0.08	10.4	0 2	22.3	0.17
At 55	24.7	0.08	6.6	0 1	18.1	0.17
At 65	17.3	0.08	3.5	0 1	13.8	0.17
At 75	11.2	0.10	1.8	0 1	9.4	0.16
At 85	6.9	0.14	0.9	0 1	6.0	0.15
By sex						
Men	55.2	0.10	25.6	0 33	29.6	0.35
Women	58.4	0.14	29.8	0 24	28.6	0.28
By race/ethnicity						
White non-Hispanics	56.9	0.07	27.6	0 23	29.3	0.24
Black non-Hispanics	53.7	0.27	26.9	0 37	26.8	0.46
Hispanics	58.0	1.58	31.6	0.87	26.4	1.76
By sex and race/ethnicity						
White non-Hispanic men	55.4	0.09	25.6	0 37	29.7	0.38
White non-Hispanic women	58.4	0.10	29.2	0 28	29.2	0.30
Black non-Hispanic men	51.0	0.35	24.9	0.66	26.0	0.72
Black non-Hispanic women	56.2	0.41	28.6	0.45	27.6	0.63
Hispanic men	59.1	0.84	28.2	1 25	30.8	1.48
Hispanic women	57.9	2.36	34.2	1 13	23.7	2.58

SE Standard error of estimate

[a] QALE at age 18 years. For the eight ages, QALE at age 18, 25, 35, 45, 55, 65, 75, and 85 years, respectively

[b] QALE loss due to depression at age 18 years. For the eight ages, QALE loss at age 18, 25, 35, 45, 55, 65, 75, and 85 years, respectively

Table 4

Additional quality-adjusted life expectancy (QALE) loss associated with the increased risk of suicide attributable to depression

Sex	Depression	Use all-cause mortality		Use non-suicide mortality		Loss to suicide	
		QALE[a]	SE	QALE[a]	SE	Loss[b]	SE
Both	Yes	27.97	0 19	28.38	0.20	0.41	0.01
	No	56.84	0.08	56.99	0.08	0.15	0.01
				Additional loss[c]		0.26	0.01
Men	Yes	25.64	0 33	26.40	0.35	0.76	0.03
	No	55.24	0 10	55.45	0.10	0.21	0.01
				Additional loss[c]		0.55	0.03
Women	Yes	29.80	0 24	30.02	0.24	0.22	0.02
	No	58.38	0 14	58.46	0.14	0.08	0.02
				Additional loss[c]		0.14	0.02

SE standard error of estimate

[a] Calculated QALE at age

[b] QALE loss at age 18 due to additional deaths by suicide

[c] Additional QALE loss at age 18 due to increased risk of suicide among those with depression

Describing the population health burden of depression: health-adjusted life expectancy by depression status in Canada

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Abstract

Introduction: Few studies have evaluated the impact of depression in terms of losses to both premature mortality and health-related quality of life (HRQOL) on the overall population. Health-adjusted life expectancy (HALE) is a summary measure of population health that combines both morbidity and mortality into a single summary statistic that describes the current health status of a population.

Methods: We estimated HALE for the Canadian adult population according to depression status. National Population Health Survey (NPHS) participants 20 years and older (n = 12 373) were followed for mortality outcomes from 1994 to 2009, based on depression status. Depression was defined as having likely experienced a major depressive episode in the previous year as measured by the Composite International Diagnostic Interview Short Form. Life expectancy was estimated by building period abridged life tables by sex and depression status using the relative risks of mortality from the NPHS and mortality data from the Canadian Chronic Disease Surveillance System (2007–2009). The Canadian Community Health Survey (2009/10) provided estimates of depression prevalence and Health Utilities Index as a measure of HRQOL. Using the combined mortality, depression prevalence and HRQOL estimates, HALE was estimated for the adult population according to depression status and by sex.

Results: For the population of women with a recent major depressive episode, HALE at 20 years of age was 42.0 years (95% CI: 40.2–43.8) compared to 57.0 years (95% CI: 56.8–57.2) for women without a recent major depressive episode. For the population of Canadian men, HALE at 20 was 39.0 years (95% CI: 36.5–41.5) for those with a recent major depressive episode compared to 53.8 years (95% CI: 53.6–54.0) for those without. For the 15.0-year difference in HALE between women with and without depression, 12.3 years can be attributed to the HRQOL gap and the remaining 2.7 years to the mortality gap. The 14.8 fewer years of HALE observed for men with depression equated to a 13.0-year HRQOL gap and a 1.8-year mortality gap.

Conclusion: The population of adult men and women with depression in Canada had substantially lower healthy life expectancy than those without depression. Much of this gap is explained by lower levels of HRQOL, but premature mortality also plays a role.

Keywords: life expectancy, healthy life expectancy, mortality, health-related quality of life, depression

Highlights

- Men and women in Canada who have depression live a substantially higher proportion of their life in an unhealthy state compared to their counterparts without depression.
- This gap in healthy life expectancy between Canadians with and without depression is primarily associated with losses in quality of life.
- Emotional state, cognitive state and pain are the key attributes associated with losses in quality of life for Canadians experiencing a recent major depressive episode.
- Based on observations from past studies of the Canadian household population, the burden of depression on healthy life expectancy at a population level appears to be greater than that associated with other chronic conditions such as diabetes, hypertension and obesity.

Introduction

Depression contributes significantly to the burden of disease throughout the world, including in Canada.[1] It is estimated that over 298 million people worldwide are living with depression.[2] In 2012, about 3.2 million Canadians over the age of 15 (11.3%) reported having experienced symptoms consistent with a major depressive episode in their lifetime, while the prevalence of such an episode in the previous 12 months was 4.7% in this population.[3] Women and young people aged 15 to 24 years experienced the highest prevalence of a 12-month major depressive episode.[3]

Depression has an important impact on health-related quality of life (HRQOL), functioning, mortality due to intentional injury and health care utilization.[4-6] In

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addition to these direct negative outcomes, depression has also been demonstrated to increase risk for coronary heart disease,[7] stroke[8] and cancer[9] and a decline in physical functioning.[10] Potential mechanisms for the relationship between depression and physical disease include immune and endocrine dysregulation and inflammatory processes.[11] Depression has also been associated with an increased risk of mortality in general community populations, as well as in patient populations with chronic illnesses such as coronary heart disease, cancer, diabetes and stroke.[11] There are likely reciprocal effects between depression and disease, with depression being a risk factor for, and a sequela of, disease.[11]

Summary measures of population health using the Global Burden of Disease methodology[1,12–15] have ranked depression very high on the list of health conditions contributing to the global and national burden of disease, particularly in terms of losses due to disability. Major depressive episode is the second leading cause of years lived with disability globally[1] as well as in the United States,[12] the United Kingdom,[13] China[14] and Canada.[15]

Less well documented is the association of depression with life expectancy and healthy (or disease-free) life expectancy. Understanding both life expectancy and healthy life expectancy among people who have depression will help to better characterize its disease burden. A recent systematic review and meta-analysis[16] concluded that people living with a mood disorder have a mortality rate twice as high as those without a mood disorder, and potential years of life lost due to mental disorders ranged from 1.4 to 32 years, with a median of 10.1 years. Jia et al.[17] reported that adults living with depression in the United States experienced a 28.9 year loss of quality adjusted life expectancy (QALE) at age 18 compared to those without depression. Results from the few existing studies on healthy or disease-free life expectancy and depression are not consistent.[18-20] A number of these studies are restricted to older adults and thus cannot be generalized to the entire population. These studies also use a measure of functional health restricted to activities of daily living, which do not consider attributes such as pain, emotion and cognition.

The objective of our study was to estimate period life expectancy (LE) and health-adjusted life expectancy (HALE) of Canadian adults (aged 20 years and older) according to depression status. Note that the period approach to estimating LE and HALE adopted in this paper is a summary measure of population health for a given period. Period life expectancy estimates the hypothetical life expectancy of an individual were they to experience the age- and sex-specific mortality rates in a given period. This should not be confused with projected life expectancy based on modelling or cohort life expectancy based on the actual mortality experience of a specific cohort. In a similar fashion, period HALE is a hypothetical estimate reflecting an individual's healthy life expectancy were they to experience the age- and sex-specific mortality and age- and sex-specific HRQOL levels at a given point in time.

These estimates are useful to better understand the population health impact of a condition. They are also useful for informing policy and programs, and for making decisions about the relative burden of specific health conditions. Because of the varied course of depression, with both chronic and episodic cases included in the population studied, the estimates in this study should not be applied to predict the expected health course of any individual.

Methods

Data sources

To estimate HALE, several types of data are necessary: all-cause mortality rates by depression status, depression prevalence and HRQOL estimates by depression status. All-cause mortality rates for the Canadian adult population with and without depression were estimated based on a methodology that partitions rates for total population into mortality rates by disease categories using a mortality relative risk or hazard ratios and a prevalence of those categories. The methodology is described in detail in our previous study.[21]

We used data from the following three sources:

- National Population Health Survey (NPHS), for estimating mortality hazard ratios (HRs) by depression status;
- Canadian Community Health Survey (CCHS), for estimating depression prevalence and HRQOL by depression status; and
- Canadian Chronic Disease Surveillance System (CCDSS), for actual age- and sex-specific all-cause mortality rates in the Canadian population, which were then partitioned into those associated with depression and those not associated with depression, based on the mortality HR estimated using the NPHS and depression prevalence estimated from CCHS.

The NPHS is a longitudinal survey conducted by Statistics Canada of 17 276 Canadians of all ages living in households in the 10 provinces. The NPHS has a biennial follow-up spanning the years 1994/95 to 2010/11 and includes death clearance against the Canadian Mortality Database.[22] These data were used to estimate mortality HR associated with depression required for estimating all-cause mortality rates for people with and without depression. Our study population at baseline included 12 373 participants aged 20 years and older.

The CCHS is an annual cross-sectional survey, conducted by Statistics Canada, of a sample of approximately 65 000 Canadians aged 12 years and older living in households in the provinces and territories.[23] Our study used a two-year CCHS sample (2009–2010) and included 103 815 participants aged 20 years and older. We used these data to estimate the prevalence of depression, as well as to attribute depression status in estimating all-cause mortality rates (see "Analysis" section for more detail). We also obtained Health Utilities Index (HUI) scores by depression status from the CCHS. We estimated depression prevalence and HUI scores from the CCHS because the data were more recent, and the larger sample size allowed for more accurate estimation of depression and HUI scores.

We used CCDSS all-cause mortality data for the period of 2007–2009 in the study. The CCDSS collects administrative data that include death and population counts by sex and five-year age groups for all residents of all ages in all provinces and territories, who use the public health care systems. Both mortality and population size information come from provincial and territorial health insurance databases

that cover about 97% of the Canadian population. Data are collected from all Canadian provinces and territories and summarized by the Public Health Agency of Canada.[24]

Measures

Depression is measured in the CCHS and NPHS using the Composite International Diagnostic Interview Short Form (CIDI-SF) instrument. The CIDI is a structured diagnostic interview, based on diagnostic criteria from the *International Classification of Diseases (ICD-10)* and the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)*, that is administered by trained interviewers. The short form of the Interview is based on a subset of CIDI questions that could still reliably reproduce prevalence estimates.[25] The CIDI-SF interview produces scores that give predicted probabilities of depression. For this study, respondents with a predicted probability of 0.9 and above were considered to have experienced a major depressive episode during the previous year. The CIDI-SF was optional content on the 2009–2010 CCHS, and not all provinces and territories chose to include this module. Estimates of depression are based on partial provincial and territorial coverage that includes five provinces (Prince Edward Island, Quebec, Saskatchewan, Alberta and British Columbia) and two territories (Nunavut and Northwest Territories).

HRQOL is measured using the Health Utilities Index Mark 3 instrument in the CCHS. The HUI is a preference-based measure of HRQOL based on responses to questions about functioning for the following eight attributes: vision, hearing, speech, ambulation, dexterity, emotion, cognition and pain.[26] Single-attribute utility scores range from 0.0 (lowest level of functioning) to 1.0 (full functional capacity). The eight attributes are combined into an overall score that ranges from 1.00 (perfect health) through 0.00 (death) to −0.36 (the worst possible health state; from a preference perspective, some health states are considered worse than death and are consequently assigned negative scores). A change of 0.03 or more in overall HUI scores and 0.05 or more in single-attribute utility scores is considered clinically important.[27]

The HUI has been widely used, and its validity and reliability in a variety of applications is supported.[27,28] A study assessing the sensitivity to depression outcomes of several multiattribute utility indexes found HUI to be able to discriminate well between levels of severity in the two depression instruments being evaluated.[29] The HUI score is used as a morbidity measure in the estimation of HALE. Depression typically has a negative impact on the emotional state, including sustained negative affect and difficulties experiencing positive affect.[30] In order to assess whether HRQOL differences are due exclusively to changes in the HUI emotion attribute, we compared HUI scores (all ages combined) by depression status for each of the eight attributes.

Analysis

Relative risks of mortality by depression status for women and for men were approximated by HRs. The HRs were estimated by fitting sex-specific discrete-time proportional models with a complementary log-log function using the completed NPHS data. We defined people with depression as those with a high probability (0.9) of having had a major depressive episode in the 12 months prior to data collection in at least one NPHS cycle, according to a method described by Simpson et al.[31] The first episode defined a case date. Respondents were followed up for mortality events every two years and a variable for each cycle was included in the model (cycle 1–cycle 9) as a time-interval measure. The sex-specific models were adjusted by age. As the HRs were used to estimate only all-cause mortality rates associated with depression, we did not adjust the models for any other comorbidities, socioeconomic status or other determinants of health. Because of the complex sample design of this survey, we used the bootstrapping method to calculate variance and produce 95% confidence intervals (CIs) for HR.[22] Age- and sex-specific depression prevalences, required for decomposing total mortality rates by depression status, were estimated using the CCHS 2009–2010. Mean HUI estimates by age, sex and depression status were also calculated. Bootstrapping was used to generate 95% CI.[23] In our study, total mortality rates by sex and 5-year age groups were estimated from CCDSS data for the period of 2007–2009. In this study, age- and sex-specific mortality rates for people with depression and for those without depression were estimated by decomposing mortality rates for the total population following the methodology we described in our previous study.[21]

We used the Chiang method[32] to generate period (2007–2009) sex-specific abridged life tables by depression using 14 standard age groups (20–24, 25–29, …, 80–84, ≥ 85 years). The Gompertz function was used to provide an accurate estimate of LE for the last open-ended 85-years-plus age interval in order to close the life table, as described by Hsieh.[33] The modified Sullivan method[34] was used for HALE estimation. According to this method the "life-years lived" was adjusted by the HUI.

$$L_x^{'} = L_x * HUI_x$$

where $L_x^{'}$ is adjusted life-years lived in age-interval x, L_x is life-years lived in age-interval x and HUI_x is Health Utilities Index Mark 3 for people in age-interval x.

The variance of LE and HALE was estimated using bootstrap methodology. Statistics Canada's surveys provide 500 bootstrap weights for variance estimation to account for complex survey designs.[22,23] Using those weights, 500 sets of HR estimates from NPHS and 500 sets of prevalence of depression and HUI estimates from CCHS were generated and all unique combinations of those estimates used to obtain mortality rates to build 250 000 life tables by depression and sex. This allowed estimating LE and HALE variance, building CIs around point estimates and conducting z tests to determine the statistical significance of the differences in LE and HALE. The 95% CIs were built based on the normality assumption. Due to the nature of the study population (adults 20 years and older), LE and HALE results were estimated at age 20 years and not birth.

The Arriaga decomposition, or partitioning, method[35] (adapted for the Sullivan method[34]) was applied to quantify which part of HALE differences according to depression status can be attributable to differences in premature mortality and which are attributable to loss of HRQOL (morbidity). For each age group, the change in HALE between the comparison groups is partitioned into the following components:

$$\Delta HALE = \Delta MORB + \Delta MORT = \frac{L_{x1} + L_{x2}}{2} \Delta HUI + \frac{HUI_1 + HUI_2}{2} \Delta L_x$$

where $\Delta MORB$ estimates change due to HRQOL, $\Delta MORT$ estimates change due to mortality, L_{x1} and HUI_{x1} refer to the number of years lived and HUI score respectively for those with depression for age-interval x, and L_{x2} and HUI_{x2} refer to the number of years lived and HUI score respectively for those without depression for age-interval x. (More details about how this methodology is applied to healthy life expectancy estimations can be found elsewhere.[21,36])

Results

Table 1 shows the demographic characteristics of the participants in the NPHS and CCHS, the two national health surveys that we used for this study. The prevalence of major depressive episode in our study population (2009/10) was 5.5% (6.7% for women and 4.2% for men; results not shown).

Based on analysis of the NPHS data, there were 2154 deaths over the 16-year follow-up period. Mortality risk was significantly higher for those who experienced a major depressive episode (age-adjusted HR = 1.43; 95% CI: 1.22–1.68). This significant risk persisted when we restricted analyses to women only (age-adjusted HR = 1.55; 95% CI: 1.28–1.87), while the risk for men was nonsignificant (age-adjusted HR = 1.28; 95% CI: 0.98–1.68) (data not shown).

Unadjusted HRQOL values (as measured by HUI scores) varied by age, sex and depression status (see Table 2). HUI scores were considerably lower in all age groups for men and women who had experienced a major depressive episode during the preceding 12 months compared to those who had not experienced such an episode. According to definitions of disability categories based on global HUI scores developed by Feng et al.,[37] men and women with depression experienced on average moderate disability (HUI < 0.89) at all age groups, whereas only older (≥ 55 years) men and women without depression fell into this category. Similarly, men with depression on average experienced severe disability (HUI < 0.70) at age 40 years while women experienced this at age 45 years; average HUI scores for men and women without depression did not drop below this threshold at any age group in our study.

An assessment of each of the eight HUI attributes by sex (all ages combined) showed that depression was associated with a clinically meaningful lower score (i.e. a difference of 0.05 or higher) for the emotion, pain and cognition attributes (Table 2).

Both LE and HALE for women with depression were lower than for those without depression; LE for men with depression was not significantly lower whereas HALE was (Table 3). LE at age 20 was 4.1 years (95% CI: 1.1–7.1) lower for women with depression compared to those without, whereas HALE at age 20 was 15.0 years (95% CI: 13.2–16.8) lower for women with depression. For men, the gap in LE at age 20 between those with and without depression was 2.7 years (95% CI: 0.0–5.4), whereas HALE at age 20 for men with depression was 14.8 years (95% CI: 12.3–17.4) lower. LE and HALE at age 65 were lower for both women and men with depression. Women with depression had an LE at age 65 years that was 3.2 years (95% CI: 1.8–4.6) lower and a HALE at age 65 that was 6.7 years (95% CI: 5.3–8.1) lower than women without depression. LE at age 65 years for men with depression was 2.1 years (95% CI: 0.1–4.1) lower than that of men without depression. HALE at age 65 years was 6.0 years (95% CI: 3.8–8.2) less for men with depression compared to those without depression.

An assessment of the individual contribution of loss of HRQOL and premature mortality to differences in HALE at age 20 indicated that, for the 15.0-year difference in HALE between women with and without depression, 12.3 years could be attributed to HRQOL losses and the remaining 2.7 years to mortality losses. The 14.8 fewer years of HALE for men with depression equated to a 13.0-year HRQOL gap

TABLE 1
Demographic characteristics of survey participants, NPHS 1994/95 and CCHS 2009/10

Characteristics	NPHS 1994/95	CCHS 2009/10
Age, mean (range) in years	45 (20–100)	47.5 (20–102)
Sex,[a] % (95% CI)		
Male	48.6 (48.3–48.9)	49.1 (49.1–49.1)
Female	51.4 (51.1–51.7)	50.9 (50.9–50.9)
Marital status,[b] % (95% CI)		
Married/common-law	68.3 (67.3–69.3)	65.7 (65.1–66.3)
Single/widowed/divorced/separated	31.7 (30.7–32.7)	34.3 (33.7–34.9)
Highest level of education,[c] % (95% CI)		
Less than high school	25.7 (24.5–26.8)	14.4 (14.1–14.8)
High school graduation	40.7 (39.5–41.9)	23.7 (23.3–24.2)
Post-secondary graduation	33.6 (32.5–34.8)	61.8 (61.3–62.4)
Depression,[d] % (95% CI)		
Yes	NA	5.5 (5.2–5.9)
No	NA	94.5 (94.1–94.8)
Depression[d] in at least one cycle (1994–2008), % (95% CI)		—
Yes	4.7 (4.4–4.9)	NA
No	95.3 (95.0–95.6)	NA

Abbreviations: CCHS, Canadian Community Health Survey; CIDI-SF, Composite International Diagnostic Interview Short Form; NA, not applicable; NPHS, National Population Health Survey.

[a] n = 12 373 (NPHS); n = 103 815 (CCHS).

[b] n = 12 371 (NPHS); n = 103 636 (CCHS).

[c] n = 12 347 (NPHS); n = 101 783 (CCHS).

[d] Based on responses to CIDI-SF, indicative of having experienced a major depressive disorder in the previous year. n = 3501 (NPHS); n = 48 355 (CCHS).

TABLE 2
Health-related quality of life status by sex, age, HUI attribute and depression status[a], Canada, 2009/10

	Average Health Utilities Index score (95% CI)			
	Women without depression	Women with depression	Men without depression	Men with depression
Age group (years)				
20–24	0.93 (0.92–0.94)	0.82 (0.77–0.87)	0.93 (0.92–0.94)	0.74 (0.65–0.83)
25–29	0.94 (0.93–0.95)	0.81 (0.76–0.85)	0.93 (0.92–0.94)	0.81 (0.76–0.87)
30–34	0.93 (0.93–0.94)	0.74 (0.65–0.84)	0.93 (0.92–0.94)	0.78 (0.71–0.85)
35–39	0.93 (0.92–0.94)	0.74 (0.64–0.84)	0.93 (0.92–0.94)	0.80 (0.74–0.87)
40–44	0.91 (0.90–0.92)	0.73 (0.68–0.78)	0.91 (0.89–0.92)	0.68 (0.60–0.77)
45–49	0.91 (0.89–0.92)	0.63 (0.54–0.71)	0.92 (0.90–0.93)	0.67 (0.58–0.76)
50–54	0.90 (0.89–0.91)	0.69 (0.63–0.75)	0.91 (0.90–0.91)	0.66 (0.59–0.73)
55–59	0.88 (0.87–0.89)	0.71 (0.65–0.77)	0.88 (0.87–0.89)	0.59 (0.49–0.70)
60–64	0.88 (0.87–0.89)	0.68 (0.62–0.75)	0.90 (0.89–0.91)	0.62 (0.52–0.72)
65–69	0.87 (0.86–0.88)	0.59 (0.49–0.69)	0.88 (0.87–0.89)	0.60 (0.49–0.71)
70–74	0.86 (0.85–0.88)	0.67 (0.58–0.77)	0.87 (0.85–0.88)	0.63 (0.45–0.81)
75–79	0.81 (0.78–0.83)	0.66 (0.54–0.78)	0.83 (0.81–0.85)	0.69 (0.39–1.00)
80–84	0.79 (0.77–0.82)	0.48 (0.16–0.81)	0.79 (0.76–0.82)	0.36 (−0.01–0.73)
≥ 85	0.72 (0.69–0.75)	0.52 (0.37–0.67)	0.74 (0.70–0.78)	0.44 (0.10–0.79)
HUI attribute				
Vision	0.99 (0.99–0.99)	0.99 (0.98–0.99)	0.99 (0.99–0.99)	0.99 (0.99–0.99)
Speech	1.00 (1.00–1.00)	1.00 (1.00–1.00)	1.00 (1.00–1.00)	1.00 (1.00–1.00)
Pain	0.97 (0.97–0.97)	0.92[b] (0.91–0.93)	0.98 (0.97–0.98)	0.93[b] (0.91–0.94)
Mobility	0.99 (0.99–0.99)	0.99 (0.98–0.99)	1.00 (1.00–1.00)	0.99 (0.98–0.99)
Hearing	1.00 (1.00–1.00)	1.00 (1.00–1.00)	1.00 (1.00–1.00)	0.99 (0.99–1.00)
Emotion	0.99 (0.99–0.99)	0.94[b] (0.93–0.95)	0.99 (0.99–0.99)	0.92[b] (0.91–0.93)
Dexterity	1.00 (1.00–1.00)	1.00 (1.00–1.00)	1.00 (1.00–1.00)	1.00 (1.00–1.00)
Cognition	0.98 (0.98–0.98)	0.93[b] (0.92–0.94)	0.98 (0.98–0.98)	0.93[b] (0.92–0.94)

Abbreviations: CI, confidence interval; CIDI-SF, Composite International Diagnostic Interview Short Form; HUI, Health Utilities Index.

Note: Light shading signifies moderate disability (global HUI score of 0.70–0.88); dark shading signifies severe disability (global HUI score < 0.70); no shading represents either no disability (global HUI score = 1.00) or mild disability (global HUI score = 0.89–0.99).

[a] Based on responses to CIDI-SF, indicative of having experienced a major depressive episode in the previous year.

[b] Clinically meaningful difference in attribute-specific HUI score between those with and without depression.

and a 1.8-year mortality gap (data not shown).

We found large differences between adult Canadians with and without depression in terms of the percentage of their life spent in an unhealthy state (calculated as [LE − HALE]/LE; see Figure 1). Both men and women with depression spent almost three times as much of their life expectancy at age 20 in poor health when compared to those without depression (31% vs. 12% for females and 32% vs. 11% for males). These large differences persisted across age groups: based on LE and HALE at age 65, men and women with depression were still living approximately twice as long in poor health as men and women of the same age without depression (40% vs. 19% for women and 43% vs. 17% for men).

Discussion

In this study, we found significantly lower LE at age 20 for women, and HALE at age 20 for both women and men, among Canadians reporting symptoms consistent with a major depressive episode in the previous 12 months. We found this across age groups, although gaps in the proportion of life expectancy spent in an unhealthy state were greater among men and younger age groups with depression.

Although direct comparisons with other health problems need to be interpreted with caution, we found that losses of HALE associated with depression in the Canadian adult population were larger than those observed for obesity class 2 and above,[21] and for diabetes and hypertension[38] in the same population. In addition, while those studies found a greater loss of HALE among women than men, we demonstrated approximately equal losses for both sexes.

Our results align with those of Jia et al.,[17] who reported a 28.9-year QALE loss at age 18 for adults with depression, which is substantively larger than the approximately

TABLE 3
Life expectancy and HALE at age 20–24 and at 65–69, by sex and depression status[a], Canada, 2009/10

		Years (95% CI)			
	Age group, years	Women without depression	Women with depression	Men without depression	Men with depression
Life expectancy	20–24	64.9 (64.8–65.0)	60.8 (59.0–62.6)	60.4 (60.3–60.5)	57.7 (55.0–60.4)
	65–69	22.4 (22.3–22.5)	19.2 (17.8–20.6)	19.1 (19.1–19.1)	17.0 (15.0–19.0)
Health-adjusted life expectancy	20–24	57.0 (56.8–57.2)	42.0 (40.2–43.8)	53.8 (53.6–54.0)	39.0 (36.5–41.5)
	65–69	18.1 (17.9–18.3)	11.4 (10.0–12.8)	15.8 (15.6–16.0)	9.8 (7.6–12.0)

Abbreviations: CI, confidence interval; CIDI-SF, Composite International Diagnostic Interview Short Form; HALE, health-adjusted life expectancy.

[a] Based on responses to CIDI-SF, indicative of having experienced a major depressive episode in the previous year.

15-year loss of HALE at age 20 for adults with depression that we report. This may be explained both by real differences in the health experience of the Canadian and US populations and by methodological differences between our studies. Moreover, the hazard ratio for mortality associated with depression we observed (HR = 1.43) is somewhat smaller than the relative risk of mortality of 2.08 for adults with depression reported in the meta-analysis by Walker et al.[16] Studies of older adult populations report a lower life expectancy for participants with depression. Both Chiao et al.[18] and Pérès et al.[20] report life expectancy at 65 years old as lower by approximately one year for participants with depression, whereas Reynolds et al.[19] found that life expectancy at age 70 of individuals with depression in the absence of other chronic diseases was reduced by approximately three years. While these studies found decreases in health expectancy in their participants living with depression, the magnitude of these decreases is less than we found in our study, except for male participants in the Reynolds et al.[19] study. The larger differences may be due to the fact that our measure of HRQOL included attributes not found in the Activities-of-Daily-Living measure of disability used in those three studies.

We found that a large portion of the lower HALE in participants with depression was due to lower levels in HRQOL. A comparison of each HUI attribute (Table 2) demonstrated that, although there is a clinically meaningful difference between men and women with and without depression for the emotion attribute, there are also meaningful differences for the pain and cognition attributes. Although the association between pain and depression is well documented, the relationship is complex and causal pathways are not thoroughly understood: data support both a model where depression leads to changes in the individual that increase their vulnerability to pain, as well as scenarios where pain symptoms are a risk factor for future depression.[39] Cognitive dysfunction has also been found in a large proportion of patients with depression and has been demonstrated to exist early on in the course of depression; it may even precede diagnosis.[40]

In addition to the expected lower values of HALE associated with lower HRQOL, we also found that a considerable amount of the decrease could be attributed to premature mortality. While our results found women demonstrated the largest losses of life expectancy, other studies on mortality risk and life expectancy according to depression status found that men had the greater mortality risk or loss of life expectancy.[11,17,19,20] However, most of these studies tended to focus on elderly or older adult populations that likely have a different risk profile than the full adult population. Indeed, Shah et al.[41] assessed both sex and age differences in the association of depression with mortality and found significant depression–age–sex interactions: mortality risk increased for men as age increased above 55 years while the inverse was found for women. Further study should be undertaken in non-elderly populations in order to better understand this phenomenon.

FIGURE 1
Percentage of life spent in an unhealthy state[a], by sex, age and depression status[b], Canada, 2009/10

Abbreviations: CIDI-SF, Composite International Diagnostic Interview Short Form; HALE, health-adjusted life expectancy; LE, life expectancy; w/o, without.

[a] (LE−HALE)/LE.

[b] Based on responses to CIDI-SF, indicative of having experienced a major depressive episode in the previous year.

Strengths and limitations

Our study benefitted from comprehensive data used to estimate LE and HALE across the age spectrum of adults in Canada. The survey data we used are from large, population-based samples of the Canadian household population: the NPHS allowed us to follow the mortality experience of over 12 000 adult Canadians for 16 years, a longer period than any of the other studies evaluating the association of depression status with life expectancy and/or healthy life expectancy.

Our study has several limitations. When estimating mortality risk, we only considered the first observed episode of probable depression based on the CIDI-SF and did not include depression status at subsequent follow-up. This could have led to misclassification of subjects whose depression status changed.

The definition of depression used in this study (predicted probability of major depressive episode of 0.9) is consistent with the recommended use of the CIDI-SF instrument and corresponds to reporting five to nine symptoms consistent with depression, including one of two cardinal symptoms. This measure was developed for the National Comorbidity Survey in the United States. A 0.9 predicted probability is a high threshold that likely results in more false negatives than false positives, and thus will underestimate, rather than overestimate the burden of depression in Canada.[42]

The CIDI-SF is an optional item in the CCHS and, as such, does not include responses from all Canadian provinces and territories, which may limit the representativeness of our results. We assessed the impact of the missing jurisdictions using an earlier CCHS cycle (2000/01) that included major depressive episode results for all provinces and territories. Age- and sex-specific major depressive episode prevalences from this cycle did not change appreciably when we removed the jurisdictions missing from the 2009/10 cycle, suggesting that representativeness of our study population was not affected by the missing jurisdictions. It should also be pointed out that our measure of depression, recent major depressive episode, does not adequately capture losses in healthy life expectancy specific to longer-term, chronic depression.

The CCHS is a household survey, and by excluding other populations, such as those living in institutions and long-term care facilities, it is possible that the prevalence of depression does not reflect that of the entire Canadian population. There may be differential non-response on the NPHS and CCHS: people with depression may be less likely to respond, resulting in an underestimation of the prevalence of depression. However, this would mean that our estimates are conservative, and that the true burden of depression may be higher than we report.

Our study aimed to describe the association between depression and healthy life expectancy and did not seek to understand the modifying influence of socioeconomic status or of other health conditions. However, in describing the mortality and morbidity of people with depression, it would be inappropriate to adjust for comorbid conditions. The influence on healthy life expectancy of health conditions that are comorbid with depression is unclear. While Pérès et al.[20] only found significant differences in healthy life expectancy between those with and without depression among those reporting three or more chronic conditions, Reynolds et al.[19] found large, significant differences in healthy life expectancy when comparing those with depression to those without in the absence of chronic diseases. Further study is needed to determine the impact of these risk factors and other potentially positive modifying effects, such as social participation, on healthy life expectancy.[18]

Finally, the approach to summarizing population health in this study represents the life and healthy life expectancy experience by a population at a given point in time, based on age- and sex-specific mortality and HRQOL estimates. These period estimates of life expectancy and HALE should only be interpreted as summary measures of population health, and not as the life and healthy life expectancies of any real individual.

Conclusion

This study demonstrates that, at the Canadian population level, women who have recently experienced a major depressive episode have a significantly lower period life expectancy and HALE at age 20 years than those who have not; for men, period HALE at age 20 is significantly lower for those who recently experienced a major depressive episode. Losses in HALE due to lower HRQOL are considerable and, while not as large, losses due to increased mortality risk also contribute to this difference, particularly among women. These findings demonstrate a high burden of depression in the Canadian population.

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Colin Steensma contributed to the study design, developed the first draft of the article, and critically reviewed the article. Lidia Loukine contributed to the study design, conducted all statistical analyses, wrote parts of the article, and critically reviewed the article. Heather Orpana contributed to the study design, wrote parts of the article, and critically reviewed the article. Louise McRae contributed to the study design and critically reviewed the article. Julie Vachon contributed to the study analysis and data interpretation and critically reviewed the article. Frank Mo, Michèle Boileau-Falardeau and Carrie Reid contributed to the data interpretation and critically reviewed the article. Bernard Choi contributed to the study concept and critically reviewed the article.

Data used in this study were accessed through sharing agreements with Statistics Canada and the Canadian provinces and territories. Other researchers can access Statistics Canada data through the Data Liberation Initiative of Statistics Canada.

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EXHIBIT C

Expert Report of James F. Gruden, M.D.

To: Patricia A. Washienko, Esq.
From: James F. Gruden, M.D.
Re: Charu Desai v. UMass Memorial Medical Center, et al.
Date: July 30, 2021

I. Materials Reviewed

I have reviewed the 50 CT examinations and their official reports (QACH 1- 50; UMM00553-UMM00689) that were interpreted by Dr. Desai and by other radiologists in the same Department at Marlborough Hospital. After reviewing each individual CT examination blindly, I then reviewed the official report for each study and the over-reviewer's provided "log of misreads" one case at a time (UMM00695-UMM00696). I intend to offer opinions on whether Dr. Desai made significant errors; whether the other radiologists made significant errors at Marlborough Hospital; and whether the peer review process here was fair. My opinions are based on my review of the records and radiologic studies, my education and training, my knowledge of the relevant medical literature, and my experience and expertise in the field of radiology, particularly in thoracic radiology.

II. Qualifications, List of Cases, and Fee Schedule

I am a board certified radiologist. I earned a Bachelor of Arts in Economics and Pre-Professional Studies with Highest Honors in 1983 from the University of Notre Dame and my M.D. degree in 1987 from the University of Miami, School of Medicine, where I was class Valedictorian and was inducted to the Alpha Omega Alpha medical honor society. I completed my internship year in Internal Medicine at Cabrini Medical Center in New York, New York. I completed my residency training in Diagnostic Radiology (1988-1992) at the New York Hospital-Cornell Medical Center. I further completed a one-year Fellowship in Thoracic Imaging at the University of California-San Francisco.

I was thereafter appointed as Assistant Professor of Radiology in Residence at the University of California-San Francisco. From 1995 through 2000, I served as Assistant Professor of Radiology at NYU School of Medicine. In early 2000, I was appointed Associate Professor of Radiology and Internal Medicine at Emory University School of Medicine in Atlanta, Georgia. I served as the Division Director of Cardiothoracic Imaging at Emory University Hospital and Clinic and founded Emory's Biomedical Imaging and CT Post-Processing Lab. From 2005 through 2015, I was at the Mayo Clinic Arizona in Phoenix-Scottsdale, Arizona, where I served as the Director of Cardiothoracic Imaging. In January 2015, I was appointed as the Chief of the Division of Body Imaging in the Department of Radiology at Weill Cornell Medical College and at the New York-Presbyterian Hospital-Weill Cornell Campus. I further serve as a Full Professor of Radiology at Weill Cornell Medical College and Assistant Attending Radiologist at the New York-Presbyterian Hospital - Weill Cornell Campus. Through my education, training, review of the medical literature and my other professional activities, I am familiar with the standard of care as it pertains to the practice of radiology, and specifically thoracic radiology.

A copy of my CV including my last 10 years of publications is attached to this report at **Exhibit A**. A list of the cases I have testified in as a witness for the last 4 years is attached at **Exhibit B**. I further state that I am being compensated as an expert in this case at the rate of $500 per hour. I have spent approximately 28 hours up to this point on this case at the present time.

III. Summary of Findings and Testimony

Based on my review of the scans and reports, Dr. Desai made no significant errors of interpretation and no errors in reporting and certainly there are, therefore, no errors that would affect immediate patient management or outcome. The reports are concise and accurate without significant typographical or descriptive errors. In addition, the reports do not recommend additional unnecessary imaging examinations. They are well within the expected standard of care at an urban teaching hospital. The "criticisms" of Dr. Desai's reporting are entirely subjective, and I found none of them to be clinically significant. I elaborate further below.

Of note, all cases were submitted in a small window in early 2017, and I am not certain why this type of "targeted review" was performed. The method of peer review used here does not conform to any appropriate or well-known guidelines for a fair peer review process. This appears to be a hastily performed focused and targeted project, the need for which I do not know. I find no issues with the accuracy or content of Dr. Desai's reports.

Specific analysis of cases interpreted by Dr. Desai, which the over-reviewer claimed were misreads, are as follows:

QACH08 R/O PE 2/4/17

The report here states that RLL and RML consolidation are unchanged since recent prior (prior CT was recent)- she did not call this rounded atelectasis, and I assume it was called round atelectasis on the prior exam (I do not have the report from that study). Regardless, the report clearly states that the appearance of the right lung has not changed.

The report mentions worsening consolidation in the LLL in the findings, but this should have been added to the impression. This is a reasonable critique, but the finding was not missed.

OVERALL: This was a PE study on an inpatient with a recent prior. The case was correctly read as no PE, no change RLL and RML consolidation, and worsening LLL consolidation. ***The impression could have added the LLL consolidation, but this is not a major interpretive error. The important findings were made and reported.***

QACH09 R/O PE 2/21/17

The report correctly states that there is no PE. It mentions a scapular fracture that I do not clearly see but there may have been added clinical information that I do not have. Pneumonia and pulmonary edema can be difficult to distinguish, especially in patients with emphysema (as in this case). The criticism is that the findings suggest pneumonia, not pulmonary edema, and that fat embolism should have been raised as a possibility. Fat embolism occurs in the setting of

long bone fracture, and I do not see that history provided (and I am not sure that your client had this history). Interestingly, the CT appearance of fat embolism looks very much like pulmonary edema so the criticism here is that fat emboli (which would look like "edema") should have been mentioned but that pulmonary edema should not have been mentioned and the findings were more likely pneumonia. This is not a logical criticism and a patient with long bone fractures and "pulmonary edema" on a CT would be suspected clinically of having fat embolism. We do not directly see "fat embolism" on CT: we see its effects, which look like pulmonary edema.

OVERALL: ***The reading on this case is well within expected standard of care.*** Fat embolism, cardiogenic edema, and diffuse pneumonia can be hard to distinguish with certainty on one CT exam. This is not an uncommon problem, and I am not sure how we decide who is correct in a case such as this, but the initial report looks fine.

QACH10 R/O PE, 2/27/17

The critique here states that multifocal pneumonia and bronchitis were not clearly stated, a "major error." The report very clearly discusses a mild multifocal pneumonia in both the Findings and Impression sections. There is also an issue because the report did not mention "bronchitis." However, emphysema was mentioned in this report. Emphysema indicates a history of significant cigarette smoking which is basically always associated with "bronchitis." The "bronchitis" in these patients is typically chronic and managed clinically. The scan quality is poor (breathing artifact, mentioned in report) and the exam is therefore more difficult to interpret, but again, it was correctly read as to the primary indication: no PE. We rarely mention "bronchitis" in patients with emphysema as it can be assumed to be present.

OVERALL**:** ***I do not see the point of the criticism. The report is accurate.***

QACH11 R/O PE, 3/7/17

I am not sure what the critique here is. It refers to contusions being reported, but that was reported in Case 12, not Case 11, and in that case, I agree that they are likely not contusions. Case 12 was not read by your client according to my records. However, in Case 11, if that is really the case in question, I see no problem with the interpretation or report. Again, the scan quality is not great (breathing artifact).

OVERALL: ***No discrepancy or problem with Case 11. The critique appears to apply to Case 12, which I am happy to address if needed.***

QACH30 noncontrast CT for Dyspnea, 2/25/17

A prior CT was two weeks earlier (although I do not have access to the report). The current report describes "infiltrates" in the left lung in both the Findings and Impression sections. While they are not specifically reported as NEW (as the critique states), the scan two weeks ago likely did not report this finding, and the referring physicians are able to realize that the findings are new based on the report, the clinical change in the patient, and referring to the prior scans and the prior report. Secretions in the trachea (not mentioned and raised as a criticism) are present in many patients with pneumonia (and COPD) and failure to mention this finding is not at all important in this instance. It is really a subjective decision by the radiologist as to whether this finding is significant enough to place in the report (it was not in this case). The lymph nodes may well be reactive (as stated in the criticism), but in a patient with a history of an advanced cancer, I see no problem with following these with a future CT to be sure. That is actually the standard of care in this instance.

OVERALL: ***Quarrels with the use of the word "new", the failure to mention tracheal secretions, and the critique of the recommended follow-up of mediastinal adenopathy are unfounded and based on subjective opinion. There is nothing wrong with this report.***

QACH33 noncontrast CT for air leak, 2/16/17

This is a complex patient with many findings and no prior imaging. The report accurately reports all the important findings. The criticism centers on the position of one of the chest tubes, which is in fact reported as IN THE MEDIASTINUM in both the Findings and Impression of the report, and there is documentation of a call to the clinical team discussing the results.

OVERALL: ***The chest tube in question is reported as IN THE MEDIASTINUM. It is clear this means it is NOT in the pleural space. The criticism is unfounded.***

QACH34 noncontrast CT for cough and weight loss, 2/14/17

The report very clearly describes both emphysema and COPD and describes secretions in the airways. A LLL infiltrate is also reported. The critique, called minor but apparently this qualified as an impact on patient care, states that LLL pneumonia was not mentioned (it was) and that there was severe "bronchitis." I do think that the mention of emphysema, COPD, and secretions in the airways in a patient known to be a smoker clearly means that "bronchitis" is present.

OVERALL: ***The report is accurate, and no information was omitted.***

QACH38 noncontrast CT, cough and SOB, 1/7/17

The report is accurate. The important findings are reported. The criticism is that there is "large and small airways disease with air trapping." Airway inflammation is basically always present in patients who smoke and who have emphysema and underlying small airway obstruction is also

uniform in this population. I do not see air trapping without expiratory images, which were not performed, but regardless: the patient is a smoker or former smoker with emphysema- this explains the clinical picture and I have no doubt that airway inflammation and small airway obstruction are also present- it is part of the overall smoking-related disease- reporting these things absolutely does not change management in this particular scenario.

OVERALL: ***This report is fine. Criticism is inaccurate (air trapping seen only with expiratory images) and subjective.***

QACH42 CT with contrast, nodule in a patient with HEENT cancer, 2/16/17

This report is totally accurate.

The critique states that primary lung cancer is more likely than metastatic disease, and of course this is true but depends on how aggressive the HEENT cancer is and what cell type it is- this an appropriate report and stating that primary lung cancer is more likely than a metastasis absolutely does not change patient management.

The criticism that venous collaterals were not mentioned is interesting. These enhanced veins are the normal reflux of contrast down branch veins from a rapid contrast injection.

OVERALL: ***This report is fine. The criticism is both unfounded and inaccurate.***

QACH50 CT with contrast, chest wall pain, 1/10/2017

This is a complex case and the discrepancies were minor and had no bearing on management. If this becomes important later, we can look more closely.

OVERALL**:** ***No significant discrepancies on a complex case.***

*** * ***

The reports of the other radiologists' reads at Marlborough Hospital, however, contain numerous typographical errors, and several have interpretive errors. My findings suggest that more thorough, consistent, and unbiased peer review and quality improvement projects are needed for the other radiologists who were involved in these cases.

Specific analysis of cases interpreted by radiologists other than Dr. Desai at Marlborough Hospital follows.

QACH22 noncontrast CT to follow a lung nodule

The Findings section states that the larger peripheral nodule has increased in size, and reports another nodule but does not give a measurement or image number (both of which should be provided).In the Impression, it states that the larger peripheral nodule is stable and the more central nodule has increased 1-2 mm in size. This contradicts the statement in the Findings section. In addition, measurement error is generally considered 1-2 mm on CT of nodules, so a 1-2 mm difference would not be considered significant. The report describes "biapical fibrous change." This actually appears consistent with an entity called pleuroparenchymal fibroelastosis (PPFE), which is not mentioned.

OVERALL: ***The Findings and Impression sections are contradictory, and the nodules are not thoroughly reported or measured***. The entity of PPFE was not suggested.

QACH23 noncontrast CT to follow a lung nodule

This exam shows a few tiny nodules (that were reported previously and have not changed) that all have a typical benign appearance. The appearance, coupled with the stability since the priors, should indicate that these are benign and require no follow-up. Instead, the entire Fleischner Guidelines are attached to the report with follow-up recommendations. This is cumbersome for the patient and referring doctor to read and is also unnecessary.

OVERALL***: The nodules on CT have a benign appearance and the report should have stated that no follow-up was needed.***

QACH24 noncontrast CT to follow lung nodules

The impression states that the patient has "scattered" apical cystic disease. This CT is actually a classic example of paraseptal emphysema and bullous disease and not cystic lung disease. "Cystic lung disease" implies a whole different set of pulmonary disorders for which the diagnostic evaluation can be costly and possibly invasive (and here, unnecessary).

OVERALL: ***The incorrect impression of cystic lung disease affects differential diagnosis and patient management.***

QACH25 noncontrast CT to follow lung nodules

The report describes stable tiny nodules (seen previously) and correctly states that no follow-up is needed. However, there are typos in the report, including in the Findings section where the location of the nodules is specified. This is not an acceptable report. In addition, unnecessary added tests (ultrasound of the gall bladder and kidney) were recommended for simple gallstones and renal cysts-no added imaging needed to be done.

OVERALL: ***Significant typographical errors in the description of the nodules and their location- the impression of benign nodules is correct, but typos in the key sections of a***

radiology report are careless and sloppy. Unnecessary added testing was recommended for benign findings.

QACH46 CT with contrast to assess for pulmonary embolism (PE)

Emboli are reported but again, in BOTH the Findings and Impression sections, there are significant typographical errors in the description of the emboli and their location. This is indefensible as these are critical findings and these errors are extensive. This indicates that the radiologist clearly does not proof reports before signing them, and this type of report is well outside the standard of care. In addition, these small emboli would be unlikely to cause right heart strain as reported: the right ventricle is not definitely dilated. Reporting emboli with right heart strain can significantly affect patient management leading to possibly unnecessary aggressive therapy. This finding was best omitted from the report or perhaps a cardiac echo should have been recommended to asses the equivocal right heart prominence.

OVERALL: ***Typos in both the Findings and Impression section make the report incoherent. These are urgent findings that must be accurately documented. Here, the errors occur in two separate parts of the same report. This is again sloppy and well outside the standard of care.***

In general, these radiologists do not have guidelines regarding how to structure a proper, clinically useful CT report. There is no consistency in how the reports are structured. There is little or no attention to detail in terms of proper description of abnormalities and many findings are poorly or inaccurately reported. Typos (and retained brackets from pre-filled templates) are rampant; punctuation is essentially nonexistent. These reports come across as hurried, careless, and sloppy and are often not accurate. A much more intensive QA with remediation is warranted.

* * *

Although not read at Marlborough Hospital, I also wanted to make a specific notation with regard to QACH 20:

QACH20 NONCONTRAST CT FOR DYSPNEA AND POSSIBLE TRACHEOBRONCHOMALACIA

The report in this case is far outside any standard. First, the clinical order specifically requested inspiratory and expiratory imaging to assess for suspected tracheobronchomalacia. The inspiratory/expiratory CT technique was not mentioned in the technique description of the report (although it was in fact performed), and the images actually DO SHOW this pathologic condition with collapse of the central airways on the expiratory imaging and areas of air trapping also on expiration, hallmarks of this diagnosis. Instead, the report mentions “no evidence of

tracheobronchial calcinosis." This is a totally different entity and was not part of the clinical indication- this entity is insignificant and causes no symptoms. These errors show a fundamental failure of understanding of the indication for the scan, the technique used, and the findings of the pathologic entity. Even worse, read the report in the Findings section under the sub-heading "Lungs." This is absolute gibberish- part of this appears to be a section of a report on a totally different examination for a different patient, and the section is filled with typos and incoherent sentence structure. Obviously, the radiologist also failed to proofread the report prior to signing it.

OVERALL: ***This report is a disaster in every way. The clinical question was ignored, there is no mention of the collapse of the airways or air trapping (which are key to the real diagnosis in this case), the report is filled with significant typographical errors, and the significant pathology was totally missed. The radiologist obviously does not know what tracheobronchomalacia is or what the findings are, and he or she did not bother to look it up or ask someone else- this is sloppy, careless, unprofessional, and unacceptable. A report like this at my institution would result in immediate disciplinary action.***

IV. Expert Opinions

Based on my interpretation of the CT scan images and corresponding reports, which were listed in the over-reviewer's findings as containing misreads by Dr. Desai, I have formed an opinion to a reasonable degree of certainty that Dr. Desai made no significant errors of interpretation and no errors in reporting. Certainly there are, therefore, no errors that would affect immediate patient management or outcome and/or that would justify termination.

Based on my interpretation of the CT scan images and corresponding reports, which were listed in the over-reviewer's findings as having been read by radiologists other than Dr. Desai at Marlborough Hospital, I have formed an opinion to a reasonable degree of certainty, that those reports contain numerous, significant, and inexplicable typographical errors and several significant interpretive errors. Other reports recommended unnecessary additional imagining examinations to evaluate insignificant findings. The reports of those studies conducted by other radiologists fell outside a reasonable standard.

Finally, based on my experience as a radiologist at a major hospital and the apparent methodology of the instant review (i.e., that all of the cases were submitted in a small window in early 2017), I have formed an opinion to a reasonable degree of certainty, that the method of peer review used in this case does not conform to any appropriate or well-known guidelines for a fair peer review process.

SIGNED UNDER THE PAINS AND PENALTIES OF PERJURY ON THIS DAY OF JULY 28, 2021.

James F. Gruden, M.D.

Exhibit A

Revised: 6/1/21

A. GENERAL INFORMATION

Name: James Franklin Gruden
Office Address: 525 E 68 Street, Box 141, Room L-019, NY, NY 10065
Home Address: 15 E 26 Street #12C, NY, NY 10010
Cell Phone: 917-251-9252
Email: jfg9007@med.cornell.edu
Citizenship: USA
Date of Birth: 07/16/60
Place of Birth: Sandusky, OH
Marital Status: Single
Race: Caucasian

B. EDUCATIONAL BACKGROUND

Certificate, Executive Healthcare Management
E-Cornell, 2021

MD University of Miami
Miami, FL
09/83-05/87
MD, 1987

BA University of Notre Dame
Notre Dame, IN
08/79-05/83
BA, Economics and Preprofessional Studies, 1983

C. PROFESSIONAL POSITIONS AND EMPLOYMENT

POSTDOCTORAL TRAINING

Fellow, Thoracic Imaging
University of California-San Francisco
San Francisco, CA
Directors: W. Richard Webb, MD and Gordon Gamsu, MD
07/01/92-06/30/93

Resident, Diagnostic Radiology
New York Hospital -Cornell Medical Center and Cooperating Hospitals
New York, NY

07/01/88-06/30/92

Intern, Internal Medicine
Cabrini Medical Center- New York Medical College
New York, NY
07/01/87-06/30/88

ACADEMIC POSITIONS

Professor of Clinical Radiology
Weill Cornell Medicine
New York, NY
01/11/15-present

Associate Professor of Radiology
Mayo Clinic College of Medicine
Phoenix-Scottsdale, AZ
10/02/04-1/10/15

Adjunct Professor of Biomedical Engineering
Georgia Institute of Technology
Atlanta, GA
07/01/02-10/01/04

Associate Professor of Radiology and Internal Medicine
Emory University School of Medicine
Atlanta, GA
01/02/00-10/01/04

Assistant Professor of Radiology
NYU School of Medicine
New York, NY
11/01/95-01/01/00

Assistant Professor of Radiology in Residence
University of California-San Francisco School of Medicine
San Francisco, CA
07/01/93-10/31/95

HOSPITAL POSITIONS

Attending Radiologist
Division Director, Cardiothoracic Imaging
New York Presbyterian-Weill Cornell Medical Center
New York, NY

01/11/15-present

Attending Radiologist
Division Director, Body and Cardiothoracic Imaging
New York Presbyterian-Weill Cornell Medical Center
New York, NY
01/11/15-01/01/2020

Consultant Radiologist
Director, Cardiothoracic Imaging
Mayo Clinic and Mayo Clinic Hospital
Phoenix-Scottsdale, AZ
10/01/07-01/10/15

Senior Associate Consultant Radiologist
Mayo Clinic and Mayo Clinic Hospital
Phoenix-Scottsdale, AZ
10/02/04-10/01/07

Attending Radiologist
Division Director, Cardiothoracic Imaging
Director, Biomedical Imaging Laboratory
Emory University Hospital and Clinic
Atlanta, GA
01/02/00-10/01/04

Attending Radiologistt
NYU Medical Center
Bellevue Hospital Center
New York, NY
11/01/95-01/01/00

Attending Radiologist
Chief, Thoracic Imaging
San Francisco General Hospital
San Francsco, CA
07/01/93-10/31/95

D. LICENSURE, BOARD CERTIFICATION, MALPRACTICE

LICENSES

New York	174823 (active)
North Carolina	2021-01926 (active)
Arizona	33278

Florida ME89033
California G73732
Georgia 046967

DEA Number: BG3334466 (active)

BOARD CERTIFICATION

Diplomate, American Board of Radiology 1992 (MOC participant)
Diplomate, National Board of Medical Examiners 1988

MALPRACTICE INSURANCE

MCIC of Vermont
Premiums paid by: Weill Cornell Medicine

E. PROFESSIONAL MEMBERSHIPS

American College of Radiology
Society of Thoracic Radiology
American College of Chest Physicians
American Roentgen Ray Society
Radiologic Society of North America

F. HONORS AND AWARDS

Editor's Recognition Award "With Distinction"
Manuscript Reviews, *Radiology*
1994, 1995, 1996, 1997, 1999

Valedictorian
University of Miami School of Medicine, Miami, FL
1987

Alpha Omega Alpha Honor Society
University of Miami Chapter, Miami, FL
1986, 1987

Graduation With Highest Honors
University of Notre Dame, Notre Dame, IN
1983

Phi Beta Kappa
University of Notre Dame Chapter, Notre Dame, IN
1983

G. INSTITUTIONAL/HOSPITAL AFFILIATION

1. Primary Hospital Affiliation: New York Presbyterian-Weill Cornell Medical Center
2. Other Hospital Affiliations: New York Presbyterian-Lower Manhattan Hospital, Brooklyn Methodist Hospital
3. Other Institutional Affiliations: None

H. EMPLOYMENT STATUS

1. Current employer: Weill Cornell Medicine
2. Employment status: Full time salaried by Weill Cornell Medicine

I. CURRENT AND PAST INSTITUTIONAL RESPONSIBILITIES AND CURRENT PERCENT EFFORT

Teaching 10% effort

Medical Students:

Weill Cornell:
Participate in the active teaching and engagement of students of all levels on Chest Radiology

Emory:
Directed and supervised all elective Cardiothoracic Imaging rotations for senior students

UCSF:
Monthly didactic lectures on chest radiology to third and fourth year students

Residents:

Weill Cornell:
Direct the top-ranked rotation by residents (now five consecutive years)
Responsible for Cardiothoracic and Body Imaging rotation structure, content (Cardiothoracic only after 1/01/2020)
Daily CT and radiograph readout with residents on Cardiothoracic Imaging rotation
Didactic lectures to Pulmonary Medicine residents and fellows
Participate in didactic Cardiothoracic conference series

Mayo Clinic Arizona:

Didactic monthly lectures to residents (new residency began 2014)
Daily readout CT and chest radiographs with residents on service (final 4 months only)

Emory:
Redesigned the Radiology Resident rotations (4 residents each month)
Insituted a Cardiac Imaging rotation for senior residents
Instituted "Imaging" as a monthly session in the Pulmonary Medicine Conference series
Daily CT and Chest film readout with residents
Twice monthly noon conferences
Formal lecture series on Cardiothoracic Imaging
Board Review sessions to fourth year residents scheduled each spring
Supervised all Cardiothoracic Imaging rotations and electives

NYU:
Daily CT and chest film readout with residents, Bellevue Hospital Center
Didactic resident conferences 6-8 times per year
Board review conferences each spring

UCSF:
Daily CT, Chest film readout with residents
Didactic conferences weekly to residents at San Francisco General Hospital
Board Review sessions (at least 3 per year) for fourth year residents
Participant, annual Mock Oral Boards Examination

Clinical Care 60% effort

Weill Cornell:
Redesigned all rotations in Body and Cardiothoracic Imaging
Lead Radiologist in weekly multidisciplinary Thoracic Oncology Conference
Lead Radiologist in weekly Pulmonary Medicine Conference
Lead Radiologist in monthly Interstitial Lung Disease CT/Pathology Conference
Took over CT/PET Service for primary chest malignancies
Initiated remote reading of Chest CTs from NYP-Brooklyn Methodist
Established remote read from home options for the Division
Redigned and constantly update Chest CT protocols at inpatient and outpatient sites
Responsible for all aspects of daily clinical Body (until 1/01/2020) and Cardiothoracic Imaging Services
Established the Lung Nodule Consult Service for outpatients
Co-direct the Lung Cancer Screening Program
Supervise all aspects of clinical scheduling
Growth from 2 to 9 full time Cardiothoracic radiologists (and 3 Cardiology imagers)
Completely built the Cardiothoracic Imaging Division that currently exists

Mayo Clinic Arizona:
Redesigned workflow and created technologist-driven protocols

Chest and cardiac CT protocols, quality control, and interpretation
Implemented routine workstation use in CT with PACS integration
Involved with planning, staffing, recruitment and did all clinical scheduling
Oversaw growth from 2 to 6 full time Cardiothoracic radiologists
Established flexible scheduling that spread to the rest of the Department

Emory:
Inherited a service that interpreted plain films only
Instituted lung cancer and coronary calcification screening programs
Established and led weekly multidisciplinary Chest Conference Thursday mornings
Devoloped all Chest CT protocols at Emory University Hospital and Clinic
Complete control over Divisional scheduling and workflow
Established flexible scheduling for the section
Founder, Biomedical Imaging Lab
Established financial independence of the Imaging Lab
Established Emory as the first Luminary Site for Image Processing (GE)
Established office space at Georgia Tech BME with link to Imaging Lab
Built the comprehensive Cardiothoracic Imaging service that exists at Emory today

NYU:
Designed and implemented computerized database for Chest Radiology Section
Participated in daily ICU radiology conference, Bellevue and NYU Medical Center
Redesigned clinical coverage schedules

UCSF:
Ran the Chest Radiology Service independently at San Francisco General Hospital
Participated in daily Pulmonary Medicine Work Rounds
Participated in weekly Pulmonary Medicine Conference
Performed all intrathoracic interventions

Administrative duties 10% effort

Weill Cornell:
Director Cardiothoracic Imaging 2015-present
Director, Body Imaging 2015-2020
Program Education Committee
Executive Committee (all Division Directors and the Chair)
Committee of Review (Promotions Committee)
Resident Selection Committee

Mayo Clinic Arizona:
Education Committee (2104-departure)
Director, Cardiothoracic Imaging (2007-2012, time-limited)

Emory:

Director, Cardiothoracic Imaging
Director and Founder, Biomedical Imaging Lab (BIL), Emory/Georgia Tech
New Horizons Committee
Finance Committee
Resident Review Committee
Executive Committee

NYU:
Utilization Management Team Leader, Radiology Reengineering Project (1997-1999)

UCSF:
Chief, Thoracic Imaging Section, San Francisco Gerneral Hospital
Clinical Practice Guidelines Committee, San Francisco General Hospital (1995-1996)
General Clinical Research Center Advisory Committee, San Francisco General Hospital (1994-departure)
Radiology Resident Selection Committee, University of California-San Francisco (1993-departure)

Research interests 20% effort

Primary experience is in the area of cardiothoracic CT, CT protocol optimization, and CT image post-processing. Specific interests center on high-resolution imaging of diffuse lung disease and the imaging findings in infiltrative lung disease, imaging of the pulmonary vasculature, and lung cancer screening and post-treatment assessment. Other activities and interests include workflow optimization, clinical operations, and involvement of the radiologist in direct patient communication. Recently, enjoy focusing on problems and pitfalls in current trend to rely solely on “expert” consensus recommendations as the foundation for practice without critical analysis. Currently focused on long-term pulmonary sequelea of Covid-19 infection.

J. RESEARCH SUPPORT

2021: Co-Investigator and Lead Radiologist, Boehringer-Ingelheim Clincal Study
COVID-related Pulmonary Complications
Lead Investigator: Rob Kaner MD
Funded 20% salary support for one year
Weilll Cornell Medicine

2012: PI MCA 1542-11
Lo dose CT with MBIR in the assessment of diffuse lung disease: comparison with conventional high resolution images (5% salary support)
General Electric Medical Systems
Mayo Clinic Arizona

2004: PI General Electric Medical Systems Grant
Coronary CTA-Cardiac Catheterization Correlative Imaging
Funded for 3 years, direct costs $150,000
Emory University Department of Radiology

2001: PI Coulter Foundation Biomedical Engineering Grant
CAD in the Detection of Pulmonary Nodules
Funded for 1 year, direct costs $100,000
Emory University Department of Radiology
Biomedical Imaging Lab

1995: CoPI AIDS Clinical Research Center Grant
CT of the thymus in HIV-infected patients: comparison to normal controls
Funded for 1 year, total costs $20,000
University of California-San Francisco School of Medicine

1994: PI Society of Thoracic Radiology Seed Grant
HRCT in HIV infected patients after negative sputum induction for PCP
Funded for 1 year, total costs $12,000
University of California-San Francisco School of Medicine

K. EXTRAMURAL PROFESSIONAL RESPONSIBILITIES

Committees:

Body Imaging Economics Committee
American College of Radiology, 2016-2018
Chair, 2018-present

MOC Exam Question Editor
American Board of Radiology, Thoracic Imaging
2018-present (renewed 3-year term 2020)

Member, STR Health and Wellness Committee
2019-present

Diagnostic Radiology Exams Standard-Setting Committee
American Board of Radiology
2019

MOC Exam Question Writer
American Board of Radiology, Thoracic Imaging
2017-2018

Manuscript and Abstract Reviewer:

AJR, 1992-2004, 2015-present
Journal of Thoracic Imaging, 2015-present
European Radiology, 2019-present
Chest, 2019-present
American Journal of Respiratory and Critical Care Medicine, 2019-present
Abstract reviewer, American Roentgen Ray Society Annual Meeting, 2014-present
Clinical Imaging, 2015-2018 (Section Editor, Cardiothoracic Imaging)
Radiology, 1992-2003

NIH Study Sections:

2005:
NIH Grant Reviewer
RFA-HL-04-031
HIV and the Lung

2002:
Special Emphasis Panel, National Heart, Lung and Blood Institute
National Institutes of Health, Washington DC
RFA HL-02-005
Novel Biomarkers of Chronic Obstructive Pulmonary Disease

2001:
Special Emphasis Panel, National Heart, Lung, and Blood Institute
National Institutes of Health, Washington DC
RFP NHLB-HR-01
Severe Asthma Consortium Development

1999:
Special Emphasis Panel, National Heart, Lung, and Blood Institute
National Institutes of Health, Washington DC
RFP NHLB-HR-99-01
Clinical Centers for Feasibility Studies on Retinoid Treatment of Emphysema

Invited Lectures:

2021: American College of Chest Physicians
“CT in Fibrotic ILD Part 1”
“CT in Fibrotic ILD Part 2”
“CT in Acute Pulmmonary Embolism”
To be recorded as Enduring Educationl Content for ACCP Members

2021: American Roentgen Ray Society Annual Meeting

"Improving the Diagnosis of UIP"
Virtual live stream due to CoVID-19

2020: American College of Chest Physicians
"CT in the Diagnosis of PFILD"
Virtual live webinar due to CoVID-19

2020: American Roentgen Ray Societ Annual Meeting
"CT in the Diagnosis of UIP: Outside the Guidelines"
To be recorded due to COVID-19

2020: Society of Thoracic Radiology Annual Meeting
"CT in the Diagnosis of UIP: Improving the Existing Guidelines"
Recorded due to COVID-19

2020: Cardiothoracic Imaging Society of New Yotk
"CT Observations in Fibrotic ILD"
New York, NY

2020: Columbia University, Visiting Professor
"The Incidental Lung Nodule"
"Current Chest Cases of Interest"
New York, NY

2019: John Evans Annual Sympsium, Weill Cornell Medicine
"Radiology Taking Responsibility: the Incidental Nodule Clinic"
New York, NY

2019: Long Island Radiologic Society
"CT in Fibrotic Lung Disease"
Jericho, NY

2019: Multidisciplinary Pulmonary Pathology Course
Memorial Sloan Kettering Cancer Center
"CT and Interstitial Fibrosis: UIP, CHP, NSIP"
New York, NY

2019: Hyman Senturia 25th Annual Memorial Lecture
"CT in Progressive-Fibrotic Interstitial Lung Disease (P-FILD)
Mallinckrodt Institute of Radiology
St. Louis, MO

2019: Symposium on the Diagnosis and Management of Lung Cancer
American College of Chest Physicians Course

“The Incidental Nodule: Fleischner Applications”
“Issues in Imaging: Non-solid Nodules, CT/PET, and Lung-RADS”
“Cases and Tumor Board”
Chicago, IL

2018: Symposium on the Diagnosis and Management of Lung Cancer
American College of Chest Physicians Course
“The Incidental Nodule: Fleischner Applications”
“Issues in Imaging: Non-solid Nodules, CT/PET, and Lung-RADS”
“Cases and Tumor Board”
Chicago, IL

2017: American Roentgen Ray Society Annual Meeting
Categorical Course Speaker
“CT and the Incidental Lung Nodule”
Washington, DC

2017: Society of Thoracic Radiology Annual Meeting
“Dendriform Pulmonary Ossification”
Austin, TX

2016: American Roentgen Society Annual Meeting
Invited Keynote Speaker
“Improving the Diagnosis of UIP”
Los Angeles, CA

2016: Society of Thoracic Radiology Annual Meeting
“Holes in the Lung: Time to Revisit Old Definitions”
Scottsdale, AZ

2015: Society of Thoracic Radiology Annual Meeting
“Improving the radiologic diagnosis of UIP”
Carlsbad, CA

2014: Mayo Clinic Imaging Course and Self-Assessment Course
“CT and Pulmonary Arterial Hypertension”
“Interesting Thoracic CT Cases”
Laguna Niguel, CA

2014: Educational Symposia (ESI) Meeting
“CT of idiopathic interstitial lung disease”
“CT of PE: new observations”
“Non-neoplastic smoking-related lung disease”
Aspen, CO

2014: CT International Symposium
“CT of idiopathic interstitial lung disease”
“CT and pulmonary hypertension”
“Smoking-related lung disease”
“Case based approach to interstitial lung disease”
Madrid, Spain

2013: Golnick Symposium Lectures
“CT and the diagnosis of UIP/IPF: diagnostic features”
Lake Bled, Slovenia

2012: Radiology International Course
“Radiation dose reduction strategies in cardiothoracic CT”
“Smoking-related lung disease”
“Coronary CTA”
“Clinical cardiac MRI”
“Cardiothoracic cases”
Valencia, Spain

2011: Mayo Clinic Diagnostic Radiology Course
“CT and interstitial llung disease”
“Interesting chest cases”
Laguna Niguel, CA

2010: UCSF Diagnostic Imaging Course
“Cardiothoracic CT cases”
“Coronary CTA: how and when”
“Non-neoplastic smoking-related lung disease”
“CT of interstitial lung disease”
Cancun, Mexico

2008: RSNA
Refresher Course: Emerging technologies
“MDCT: after the scan”
Chicago, IL

2008: IAME Medical Meetings
“Pitfalls in cardiac CT”
“Cardiac CT: urgent or emergent?”
“MDCT of pulmonary embolism”
“Pulmonary hypertension: the role of MDCT”
Las Vegas, NV

2008: Orange County (CA) Radiology Society
“CT of idiopathic ILD”

"Cardiac CT: urgent or emergent?"
"Management of the solitary lung nodule"
Irvine, CA

2007: North American Society of Cardiac Imaging (NASCI)
"Pitfalls in coronary CTA interpretation"
Washington, DC

2007: Educational Symposia (ESI)
Cardiovascular CT
"Cardiac CT: urgent or emergent?"
"Pulmonary arterial hypertension"
"Cardiac CT postprocessing and data management"
Las Vegas, NV
2007: RSNA
Refresher Course: Emerging technologies
"MDCT: after the scan"
Chicago, IL

2007: American College of Chest Physicians (ACCP) Review Course
"Chest radiology I"
"Chest radiology II"
Scottsdale, AZ

2007: American Roentgen Ray Society
"Clinically relevant thoracic CT postprocessing"
Orlando, FL

2007: Italian Congress on Interstitial Lung Disease
"HRCT: patterns and diagnoses"
"Radiologic approaches to ILD"
Rome, Italy

2007: Educational Symposia (ESI)
Cardiovascular CT
"Cardiothoracic CT in the ER"
"CT and pulmonary embolism: new observations"
"Pulmonary arterial and venous hypertension"
Vail, CO

2007: Mayo School of Continuing Education
Updates in Imaging
"ILD: CT-pathologic correlates"
"Non-neoplastic smoking-related lung disease"
Kona, HI

2006: Mayo School of Continuing Education
Update in Rheumatology
“HRCT in connective tissue disorders”
Victoria, BC, Canada

2006: Symbion Healthcare Annual Meeting
“Cardiac CT Part One: Acquisition”
“Cardiac CT Part Two: Interpretation”
“MDCT of pulmonary embolism: new observations”
Gold Coast
Queensland, Australia

2006: RSNA
Refresher Course
“Post-processing MDCT data sets: applications”
Chicago, IL

2006: American Roentgen Ray Society
“Clinically relevant thoracic CT postprocessing”
Vancouver, BC, Canada

2006: Mayo School of Continuing Education
Multidisciplinary Update in Pulmonary and Critical Care Medicine
“MDCT of the airways”
Scottsdale, AZ

2006: Society of Thoracic Radiology
“Coccidioidomycosis”
Orlando, FL

2006: NYU Department of Radiology
Body Imaging in the Caribbean
“Pulmonary hypertension”
“CT and the diagnosis of thrombo-embolic disease”
“Interstitial lung disease: radiologic-pathologic correlation”
“Chest CT cases”
St. John, US Virgin Islands

2005: Stanford University Symposium on Multidetector CT
Workstation Showdown Presenter
General Electric Advantage Windows Workstation
San Francisco, CA

2005: Mayo School of Continuing Education
Multidisciplinary Update in Pulmonary and Critical Care Medicine
“Role of CT angiography in acute and chronic pulmonary embolic disease”
Scottsdale, AZ

2005: Society of Body Computed Tomography Annual Meeting
Workstation Showdown Presenter
General Electric Advantage Windows Workstation
Miami Beach, FL

2005: University of California (Davis)
3D Imaging Amonst the Temples
“Thoracic CTA: acute PE and aortic disease”
“Thoracic CTA: pulmonary arterial and venous hypertension”
“Cardiothoracic image processing tools”
Cancun, Mexico

2005: American Roentgen Ray Society Annual Meeting
Categorical Course, Cardiopulmonary Imaging
“Pulmonary CTA: Techniques and Pitfalls in Interpretation”
New Orleans, LA

2005: Yale University School of Medicine
Radiology Grand Rounds
“CT of Pulmonary Thrombo-embolic Disease: New Concepts”
New Haven, CT

2005: Long Island College Hospital
Radiology Grand Rounds
“CT of Pulmonary Embolism: Techniques and Pitfalls”
Brooklyn, NY

2004: Boston University School of Medicine
Radiology Grand Rounds
“Cardiothoracic Image Processing Applications”
Boston, MA

2004: Bridgeport Hospital-Yale New Haven Health System

Radiology Grand Rounds
“Cardiac MDCT Techniques and Future Applications”
Bridgeport, CT

2004: Educational Symposia (ESI)
Cardiovascular CT 2003: What You Need to Know
“Image processing tools”
“Pulmonary arterial and venous hypertension”
Las Vegas, NV

2004: National Conference on Venous Thromboembolism
GE Medical Systmes-Asia
“MDCT of Acute and Chronic Pulmonary Embolism”
Beijing, China

2004: Stanford University Symposium on Multidetector CT
“How workstations have changed the way I read images”
San Francisco, CA

2004: American Roentgen Ray Society Annual Meeting
Refresher Course Speaker
“MDCT of pulmonary thromboembolism”
Miami Beach, FL

2004: Society of Thoracic Radiology
“Image processing applications in the thorax”
Rancho Mirage, CA

2004: University of California (Davis)
3D Imaging Amonst the Temples
“Thoracic CTA: ccute PE and aortic disease”
“Thoracic CTA: pulmonary arterial and venous hypertension”
“Cardiothoracic image processing tools”
“CT coronary assessment: calcium and contrast”
Cancun, Mexico

2004: Emory University School of Medicine
Radiology Grand Rounds
“Cardiac MDCT: calcium scoring and beyond”
Atlanta, GA

2003: Educational Symposia (ESI)
Cardiovascular CT 2003: What You Need to Know

“Image processing tools”
“Pulmonary arterial and venous hypertension”
“Cariopulmonary MDCT cases”
Las Vegas, NV

2003: American Roentgen Ray Society Annual Meeting
Refresher Course Speaker
"Multi-detector pulmonary CTA”
San Diego, CA

2003: American Roentgen Society Annual Meeting
General Electric Medical Systems Seminar
“3D Imaging: enhancing the radiologist-clinician relationship”
San Diego, CA

2003: Insitiute for Advanced Medical Education (IAME)
Clinical Essentials of CT and MRI
“Workstation applications in thoracic CT”
Hands-On Workstation Training Sessions
Las Vegas, NV

2003: Society of Thoracic Radiology Annual Meeting
"Multi-detector CT angiography"
Miami Beach, FL

2002: Solitary Pulmonary Nodule Working Seminar
“Dynamic CT of pulmonary nodules”
“Case studies: functional assessment of the SPN”
Banff, Alberta, Canada

2002: American Roentgen Ray Society Annual Meeting
Refresher Course Speaker
"Multi-channel CT and venous thromboembolic disease: new directions"
Atlanta, GA

2001: Brown University School of Medicine
Radiology Grand Rounds
"MDCT in lung nodule detection: new applications"
Providence, RI

2001: Southeastern Interventional Radiology Society
"MDCT in pulmonary embolism"
Atlanta, GA

2001: Educational Symposia (ESI)

Multislice CT
"MDCT in nodule detection"
"MDCT in nodule characterization"
"HRCT with MDCT: concepts of diagnostic accuracy"
New York, NY
2001: Society of Thoracic Radiology Annual Meeting
"MDCT in pulmonary embolism: new applications"
Boca Raton, FL

2001: Emory University School of Medicine
Radiology Grand Rounds
"MDCT in pulmonary embolism"
Atlanta, GA

2000: Emory University School of Medicine
Surgery Grand Rounds
"CT in pulmonary embolism"
Atlanta, GA

2000: Albert Einstein School of Medicine
Radiolgy Grand Rounds
"Nodule localization on HRCT"
Bronx, NY

2000: Montefiore Medical Center
Radiology Grand Rounds
"Nodule localization on HRCT"
Bronx, NY

2000: Mt. Tabor (Brazil) School of Medicine
Seminars in Pulmonology
"HRCT: anatomy and terminology"
"Pulmonary infections"
"Pulmonary embolism: imaging tools"
"HRCT: specific diagnoses and diagnostic accuracy"
Salvador, Bahia, Brazil

2000: UCSF Department of Radiology
Body Imaging with CT and MRI
"CT in "R/O PE": application and interpretation"
"Pitfalls in HRCT interpretation"
"CT-HRCT assessment of nodular lung disease"
"UIP, DIP, IPF, BOOP, BO, NSIP, ETC."
Palm Springs, CA

1999: Maine Medical Center
Kjeldgaard Seminar on Interstitial Lung Disease
"Concepts of accuracy of HRCT in interstitial lung disease"
"Nodule localization on HRCT"
Portland, ME
1999: NYU Department of Radiology
CT and MRI Head-to-Toe
"Can HRCT obviate lung biopsy?"
"Nodule localization on HRCT"
New York, NY

1999: Society of Thoracic Radiology Annual Meeting
"Nodule localization algorithm using HRCT"
Amelia Island, FL

1999: Mt. Sinai Medical Center
Occupational Medicine Grand Rounds
"Use of HRCT in pneumoconiosis"
New York, NY

1999: Mt. Sinai Medical Center
Pulmonary Medicine Grand Rounds
"Can HRCT obviate biopsy?"
New York, NY

1999: Thomas Jefferson Medical College
Radiology Grand Rounds
"Nodule localization on CT/HRCT"
Philadelphia, PA
1998: NYU Department of Radiology
Postgraduate Radiology in Puerto Rico
"Clinical indications for HRCT"
"Pitfalls in HRCT interpretation"
"CT of focal lung disease"
Dorado, PR

1998: NYU Department of Radiology
CT and MRI Head-to-Toe
"HRCT: Can it obviate lung biopsy?"
"Nodule localization on CT/HRCT"
New York, NY

1998: UCSF Department of Radiology
Body Imaging in Paradise
"How to read HRCT"

"Pitfalls in HRCT interpretation"
"CT of the airways: large and small"
"CT of focal lung disease"
Kona, HI

1998: New York Roentgen Society Spring Conference
"Pitfalls in HRCT Interpretation"
New York, NY

1997: International Infectious Disease Congress
"Use of HRCT in AIDS"
"Imaging the complications of HIV disease: new observations"
"Imaging of pleuroparenchymal infections"
"Imaging in AIDS"
Rosario, Argentina

1997: NYU Department of Radiology
CT and MRI Head-to-Toe
"CT/HRCT in AIDS"
"Pitfalls in HRCT interpretation"
New York, NY

1997: UCSF Department of Radiology,
Body Imaging in Paradise
"Helical CT of the airways"
"CT/HRCT of nodular lung disease"
"HRCT: pattern approach"
"Applications of helical CT including embolic disease"
"Radiology in the world of managed care"
Kona, HI

1997: Montefiore Medical Center and Jacobi Medical Center
Albert Einstein University School of Medicine
Radiology Grand Rounds
"Pitfalls in HRCT interpretation"
Bronx, NY

1997: Emory University Department of Radiology
Radiology Grand Rounds
"Classics in chest CT"
Atlanta, GA

1996: Society of Thoracic Radiology Annual Meeting
"AIDS-related neoplasms"
Kona, HI

1996: UCSF Department of Radiology
Diagnostic Radiology Seminars
"Pulmonary complications of AIDS"
"CT of nodular lung disease"
"Pleuroparenchymal infections"
"CT of the airways"
"Basic HRCT Interpretation"
Maui, HI

1996:New York Roentgen Society Spring Conference
"Noninfectious complications of AIDS"
New York, NY

1996: UCSF Department of Radiology
Body Imaging in Paradise
“Utility of HRCT and interpretive pitfalls”
“CT of nodular lung disease”
“CT of the airways”
“HRCT: a simple approach to interpretation”
Kona, HI

1996: NYU Department of Radiology
CT and MRI Head-to-Toe
"Chest CT utilization in HIV-AIDS”
New York, NY

1996: UCSF Department of Radiology
Imaging in AIDS/Trauma
"Pulmonary Infections in AIDS"
"AIDS-related neoplasms"
"Pleuroparenchymal infection"
San Francisco, CA

1996: Albany Medical College
Radiology Grand Rounds
"CT of the airways"
"CT of nodular lung disease”
Albany, NY

1995: LSU School of Medicine
Radiology Grand Rounds
“CT of the airways”
New Orleans, LA

1995: Society of Thoracic Imaging Annual Meeting
"AIDS-related thoracic neoplasms"
Amelia Island, FL

1995: UCSF Department of Radiology
Resident Review Course
"Pulmonary infections"
San Francisco, CA

1995: UCSF Department of Radiology
Radiology Spring Training
"HRCT findings in airways disease"
"Imaging of chest disease in AIDS"
"CT/HRCT and nodular lung disease"
Phoenix, AZ

1995: South Central Kansas Radiology Society
“Clinical utility of HRCT”
“Imaging the thoracic complications of AIDS”
Wichita, KS

1995: UCSF Department of Radiolgy,
Annual Postgraduate Course in Diagnostic Imaging
"Pitfalls in HRCT interpretation"
San Francisco, CA

1995: UCSF Department of Radiology
Imaging in AIDS and Trauma
“Pulmonary infections in AIDS”
“AIDS-related neoplasms”
“Pulmonary infections in the emergency room”
San Francisco, CA

1995: UCSF Department of Radiology
Body Imaging in Paradise
"HRCT: how to read it and when to do it"
"Features and value of HRCT in airways disease"
"Imaging and diagnosis in HIV-related chest disease"
"CT in the evaluation of nodular lung disease"
Kona, HI

1995: UCSF Department of Radiology
Practical Body Imaging

"CT/HRCT in AIDS"
Monterey, CA

Organization of National or International Conferences:

2021: Moderator, "Cystic Lung Disease'
Society of Thoracic Radiology Annual Meeting
Live Webinar due ot CoVID-19

2016: Moderator, Chest Scientific Sessions
American Roentgen Society Annual Meeting
Los Angeles, CA

2015: Moderator, "Chest Imaging" Session
American Roentgen Ray Society Annual Meeting
Toronto, Canada

2010: Moderator, "Thoracic Oncology" Session
European Society or Thoracic Imaging Annual Meeting
Bern, Switerland

2007: Moderator, "Advanced MDCT in the Thorax" Course
American Roentgen Ray Society Annual Meeting
Orlando, FL

2006: Moderator, "Noncardiac Applications of Chest MDCT" Course
American Roentgen Ray Society Annual Meeting
Vancouver, BC, Canada

2004: Moderator, "3D and Functional Imaging" Session
Society of Thoracic Radiology Annual Meeting, Rancho Mirage, CA

1999: Moderator, "High Resolution CT" Session
Society of Thoracic Radiology Annual Meeting, Amelia Island, FL

1995: Course Co-Director, "Imaging in AIDS" CME Course
University of California-San Francisco Department of Radiology

L. BIBLIOGRAPHY

1. Original Articles:

Escalon JG, Legasto AC, Toy D, **Gruden JF**. Central paradiaphragmatic middle lobe involvement in nonspecific interstitial pneumonia. Eur Radiol. 2021 Feb 23. doi: 10.1007/s00330-021-07741-z. Epub ahead of print. PMID: 33624164.

Groner LK, Green DB, Weisman SV, Legasto AC, Toy D, **Gruden JF**, Escalon JG. Thoracic Manifestations of Rheumatoid Arthritis. Radiographics 2021;41(1):32-55.

McLaren TA, **Gruden JF**, Green DB. The bullseye sign: A variant of the reverse halo sign in COVID-19 pneumonia. *Clin Imaging* 2020 Jul 28;68:191-196. Online ahead of print. PMID: 32853842

Gruden JF, Naidich DP, Machnicki SC, Cohen SL, Girvin F, Raoof S. An Algorithmic Approach to the Interpretation of Diffuse Lung Disease on Chest CT Imaging. *Chest* 2020;157(3):612-635.

Green DB, Legasto AC, Port J, **Gruden JF**. CT features of lung parenchymal invasion in malignant thymoma. *Eur Radiol* 2019; 29(9):4555-4562.

Shostak E, Rasheed A, Jessurun J, **Gruden JF.** A diagnostic conundrum: progressive tubular lung mass in an asymptomatic young female. *Chest* 2019; 155(5):e131-e135.

Wu X, Kim GH, Salisbury ML, Barber D, Bartholmai BJ, Brown KK, Conoscenti CS, De Backer J, Flaherty KR**, Gruden JF**, Hoffman EA, Humphries SM, Jacob J, Maher TM, Raghu G, Richeldi L, Ross BD, Schlenker-Herceg R, Sverzellati N, Wells AU, Martinez FJ, Lynch DA, Goldin J, Walsh SLF. Computed tomographic biomarkers in Idiopathic Pulmonary Fibrosis. the future of quantitative analysis.. *Am J Respir Crit Care Med.* 2019; 199(1):12-21.

Green DB, Pua BB, Crawford CB, Abby GN, Drexler IR, Legasto AC, **Gruden JF**. Screening for lung cancer: communicating with patients. *AJR* 2018; 210(3):497-502.

Gruden JF, Green DB. Reply to “Appropriate timing for follow-Up CT imaging for stable lung CT screening reporting and data system Category 3 lesions identified at baseline low-dose CT. *AJR* 2018; 211:W302.

Escalon JG, Wu X, Drexler IR, Lief L, Plataki M, Bender M, **Gruden JF.** Rare case of pulmonary involvement in an adult with Kawasaki disease. *Clin Imaging* 2018; 47:1-3.

Gruden JF, Green DB, Legasto AC, Jensen EA, Panse PM. Dendriform pulmonary ossification in the absence of usual interstitial pneumonia: CT features and possible association with recurrent acid aspiration. *AJR* 2017; 209:1209-1215.

Green DB, Legasto AC, Drexler IR, **Gruden JF.** Pulmonary fibrosis on the lateral chest radiograph: Kerley D lines revisited. *Insights Imaging* 2017; 8:483-489.

Gruden JF. CT in Idiopathic Pulmonary Fibrosis: diagnosis and beyond. AJR 2016; 206:495-507.

Libby LJ, Narula N, Fernandes H, **Gruden JF**, Wolf DJ, Libby DM. Imatinib Treatment of Lymphangiomatosis (Generalized Lymphatic Anomaly*). J Natl Compr Canc Netw* 2016;14(4):383-386.

Gruden JF, Panse PM, Gotway MB, Jensen EA, Wellnitz CV, Wesselius L. Diagnosis of Ususal Interstitial Pneumonitis in the absence of honeycombing: evaluation of specific CT criteria with clinical follow-ip in 38 patients. *AJR* 2016; 206(3):472-80.

Jaroszewski DE, Notrica DM, McMahon LE, Hakim FA, Lackey JJ, **Gruden JF**, Steidley DE, Johnson KN, Mookadam F. Creative management of acquired thoracic dystrophy in adults after open pectus excavatum repair. *Ann Thorac Surg* 2014; 97:1764-70.

Oanikkath R, Costilla V, Hoang P, Wood J, **Gruden JF**, Dietrich B, Gotway MB, Apppleton C. Chest pain and diarrhea: a case of Campylobacter jejuni-associated myocarditis. *J Emerg Med* 2014; 46:180-83.

Swink J, Panse PM, **Gruden JF**, Jensen EA, Wesselius L. Tubular pulmonary opacities detected at chest radiography: an unusual etiology. *Clin Pulm Med* 2014; 21:150-53.

Panse PM, Jensen EA, **Gruden JF**, Gotway MB. Hyperattenuating lung parenchyma: a rare diagnostic consideration. *Clin Pulm Med* 2014; 21:104-06.

Gruden JF, Panse PM, Leslie KO, Tazelaar H,T, Colby TV. HRCT features of UIP diagnosed at open lung biopsy 2000-2009. *AJR* 2013; 200:458-467.

Hakim FA, **Gruden JF**, Panse PM, Alegria JR. Coronary artery ectasia in an adult with Noonan syndrome detected on coronary CT angiography. *Heart Lung Circ* 2013; 22:1051-53.

Pandit A, Panse PM, **Gruden JF**, Gotway MB. Pulmonary artery sheath hematoma with pulmonary arterial compression: a rare complication of type A dissection mistaken for aortitis. *Eur Heart J 2013*; 34:3459.

Pandit A, Panse PM, Aryal A, **Gruden JF**, Gotway MB. A new intracavitary lesion at echocardiography and MR: a case of mistaken identity. *Int J Cardiovasc Imaging* 2013; 29:1203-05.

Morris MF, Suri RM, Akhtar NJ, Young PM, **Gruden JF**, Burkhartr HM, Williamson EE. Computed tomography as an alternative to catheter angiography prior to robotic mitral valve repair. *Ann Thorac Surg* 2013; 95:135-39.

Panse PM, **Gruden JF**, Viggiano RW, Smith ML, Gotway MB. Muliple ground-glass opacity pulmonary nodules: an unusual thoracic CT appearance of a rare diagnosis. *Clin Pulm Med* 2013; 20:199-201.

Jaroszewski DE, Lam-Himlin D, **Gruden JF**, Lidner TK, Etxebarria AA, DePetris G. Plexiform leiomyoma of the esophagus: a complex radiographic, pathologic, and endoscopic diagnosis. *Ann Diagn Pathol* 2011; 15:342-46.

Leslie KO, **Gruden JF**, Parish JM, Scholand MB. Transbronchial biopsy interpretation in the patient with diffuse parenchymal lung disease. *Arch Pathol Lab Med 2007*; 131:407-23.

Gruden JF. Thoracic CT performance and interpretation in the multi-detector era. *J Thorac Imaging* 2005; 20(4):253-64.

Gruden JF, Tigges S, Baron M, Pearlman H. MDCT pulmonary angiography: image processing tools. *Semin Roentgenol* 2005; 40:48-63.

Gruden JF, Ouanounou S, Tigges S, Norris SD, Klausner TS. Incremental benefit of maximum intensity projection (MIP) images on observer detection of pulmonary nodules revealed by multidetector CT. *AJR* 2002; 179:149-157.

Gruden JF, Campagna G, McGuinness G. Variable CT appearance of the bronchial stump and second carina after left upper lobectomy. *J Thorac Imag* 2000; 15:138-143.

Gruden JF, Webb WR, Naidich DP, McGuinness G. Anatomic localization of multinoodular disease on high-resolution CT (HRCT): evaluation of a simple algorithm. *Radiology* 1999; 210:711-720.

McGuinness G, **Gruden JF**. Viral and *Pneumocystis carinii* infections of the lung in the immuncompromised host. *J Thorac Imag* 1999; 14:25-36.

McGuinness G, **Gruden JF**, Garay SM, Naidich DP. Thoracic complications of AIDS: imaging findings and diagnostic strategies. *Sem Resp Crit Care Med* 1998;19(5):543-560.

Gruden JF, Naidich DP. HRCT: can it obviate lung biopsy? *Clin Pulm Med* 1998; 5(1):23-35.

Gruden JF, Huang L, Turner J, Webb WR, Merrifield C, Stansell J, Gamsu G, Hopewell PC. High-resolution CT in the evaluation of clinically suspected Pneumocystis carinii pneumonia in AIDS patients with normal, equivocal, or nonspecific radiographic findings. *AJR* 1997; 169:967-975.

Naidich DP, **Gruden JF**, McGuinness G, McCauley DI, Bhalla M. Volumetric (helical/spiral) CT (VCT) of the airways. *JTI* 1997; 12: 11-28.

McGuinness G, **Gruden JF**, Naidich DP, Jagardar J, Harkin T, Bhalla M. AIDS-related airways disease. *AJR* 1997; 168: 67-77.

Bhalla M, Naidich DP, McGuinness G, **Gruden JF**, Leitman BS, McCauley DI. Diffuse lung disease: assessment with helical CT- preliminary observations of the role of maximum and minimum intensity projection images. *Radiology* 1996; 200:341-347.

Murray JG, Caoli E, **Gruden JF**, Evans SJJ, Halvorsen RA, Mackersie RC. Acute rupture of the diaphragm due to blunt trauma: diagnostic sensitivity and specificity of CT. *AJR* 1996; 166: 1035-1039.

Huang L, Schnapp LM, **Gruden JF**, Hopewell PC, Stansell JD. Presentation of AIDS-related pulmonary Kaposi's sarcoma diagnosed by bronchoscopy. *Am J Respir Crit Care Med* 1996; 153: 1385-1390

Gruden JF, McGuinness G. Pitfalls in HRCT interpretation. *Crit Rev Diag Imag* 1996; 37(5): 349-434.

Gruden JF, Huang L, Webb WR, Gamsu G, Sides DM, Hopewell PC. AIDS-related pulmonary Kaposi's sarcoma: radiographic findings with bronchoscopic correlation. *Radiology* 1995; 195:545-552.

Gruden JF, Webb WR, Yao DC, Sandhu JS, Klein JS. Bronchogenic carcinoma in HIV-seropositive patients: clinical and radiographic findings. *J Thorac Imag* 1995; 10:99-105.

Gruden JF, Webb WR. Identification and evaluation of centrilobular opacities on high-resolution CT. *Sem Ultrasound, CT, MRI* 1995; 16 (5):435-449.

Gruden JF, Webb WR, Sides DM. Disseminated tracheobronchial papillomatosisis: HRCT features. *J Comput Tomogr* 1994;18(4):640-642.

Gruden JF, Webb WR. CT findings in a proved case of respiratory bronchiolitis. *Search Pulmonol* 1994;4(2):8-9.

Gruden JF, Webb WR, Warnock M. Centrilobular opacities in the lung on HRCT: diagnostic considerations and pathologic correlation. *AJR* 1994; 162:569-574.

Gruden JF, Stern EJ. Bilateral pneumothorax after percutaneous lung biopsy: evidence for incomplete pleural fusion. *Chest* 1994; 102(2):627-628.

Gruden JF, Klein JS, Webb WR. Percutaneous transthoracic needle biopsy in AIDS: analysis of 32 patients. *Radiology* 1993; 189:567-571.

Gruden JF, Webb WR. CT findings in a proved case of respiratory bronchiolitis. *AJR* 1993;161:44-46.

Gruden JF, O'Moore PV. Plain film of the abdomen- indications and limitations. *Intern Med* 14:12-27, 1993.

Gruden JF, Kaye JJ. Subchondral lucencies and synovial disease. *Clin Imaging* 14:333-340, 1990.

2. Chapters and Reviews

Schneider F, **Gruden JF**, Tazelaar HD, Leslie KO. Pleuropulmonary pathology in patients with rheumatic disease (review). *Arch Pathol Lab Med* 2012; 136:1242-52.

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Abstract and Presentation, European Respiratory Society

Barcelona, Spain

2012:
Gruden JF, Panse PM, Gotway MB, Wellnitz CV.
"UIP without honeycombing: HRCT features"
Abstract and Presentation, European Society of Thoracic Imaging
London, UK

2011:
Gruden JF, Panse PM.
"Dendriform pulmonary ossification: clinical correlates"
Scientific Poster and Presentation, European Respiratory Society
Amsterdam, The Netherlands

Gruden JF, Panse PM.
"CT features in dendriform pulmonary ossification"
Scientific poster and presentation, European Society of Thoracic Imaging
Heidelberg, Germany

2010:
Gruden JF, Panse PM.
"Dual energy GSI (gemstone spectral imaging) in comparison to conventional dynamic CT in pulmonary nodule assessment: initial observations"
Abstract abd Presentation, European Society of Thoracic Imaging
Bern, Switzerland

Gruden JF, Panse PM, Leslie KO.
"HRCT features of UIP diagnosed at open biopsy"
Scientific Poster and Presentation, European Respiratory Society
Barcelona, Spain
Gruden JF, Panse PM.
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Cannes, France

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San Diego, California

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Pearlman H, **Gruden JF**, Gal A.
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Gruden JF, Huang L, Swanson MS, Turner J, Merrifield C, Hopewell PC.
“Chest radiograph-based probability classification for possible *Pneumocystis carinii* pneumonia (PCP) in patients with AIDS: prospective evaluation in 392 patients”
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"Three-dimensional virtual bronchoscopy: correlation with fiberoptic bronchoscopy in normal and diseased airways"
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Gruden JF, Huang L, Webb WR, Gamsu G, Turner J, Stansell JD, Hopewell PC.
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Abstract and Presentation, RSNA Scientific Sessions
Chicago, IL

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"AIDS-related pulmonary KS: radiographic findings and staging system with bronchoscopic correlation in 76 patients"
Abstract and Presentation, American Roentgen Ray Society
Washiungton, DC

Gruden JF, Murray JF, Webb WR.
"Pitfalls in HRCT interpretation"
Scientific Exhibit, American Roentgen Ray Society
Washington, DC

Oldham SAA, **Gruden JF**.
AIDS-related neoplasms: can we tell them apart?
Scientific Exhibit, RSNA
Chicago, IL

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Birmingham UK

1994:
Gruden JF, Webb WR, Yao DC, Klein JS, Sandhu JS.

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Abstract and Presentation, American Roentgen Ray Society Meeting

Gruden JF, Webb WR, Warnock M.
“Centrilobular opacities on HRCT: diagnostic considerations and pathologic correlation”
Abstract and Presentation, American Roentgen Ray Society Meeting

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“Clinical and radiographic presentation of pulmonary Kaposi's sarcoma”
Exhibit, International Symposium on AIDS
Yokahama, Japan

1993:
Gruden JF, Klein JS, Webb WR.
“Transthoracic needle biopsy in AIDS”
Abstract and Presentation, Society of Thoracic Radiology
Hilton Head, SC

Gruden JF, Klein JS
“The thoracic manifestations of AIDS and HIV disease”
Exhibit, American Roentgen Ray Society
San Francisco, CA

Exhibit B

Below is a list of all cases in which, during the previous 4 years, I have testified as an expert at trial or by deposition.

1. In 2018, I testified as an expert in the matter of *Ingram v. Blanco*; and

2. In 2019, I testified as an expert in the matter of *Bosco v. Staten Island University Hospital*.

EXHIBIT D

UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS

CHARU DESAI, Plaintiff, v. UMASS MEMORIAL MEDICAL CENTER, INC.; UMASS MEMORIAL MEDICAL GROUP; UNIVERSITY OF MASSACHUSETTS MEDICAL SCHOOL, UMASS MEMORIAL MARLBOROUGH HOSPITAL, MAX ROSEN, M.D., DARREN BRENNAN, M.D., STEPHEN TOSI, M.D., AND KARIN DILL, M.D., Defendants.	CIVIL ACTION NO.: **4:19-CV-10520-DHH**

PLAINTIFF CHARU DESAI'S EXPERT WITNESS DISCLOSURE

The Plaintiff, Charu Desai, M.D., by and through her attorneys, discloses the witness listed below may be called at trial to offer expert testimony.

I. *Disclosure – Michael Morrison, Ph.D.*

Plaintiff expects to call Michael Morrison, Ph.D., to offer expert opinion testimony. Dr. Morrison is a tenured Assistant Professor of Economics at Edinboro University of Pennsylvania and the Assistant Department Chair of the Department of Business and Economics. He earned a Bachelor of Sciences in Economics in 2004 from Montana State University in Bozeman, Montana. Dr. Morrison then earned a Master's degree in Economics in 2012, at the University of New Mexico, in Albuquerque, New Mexico. He earned his Ph.D. in economics in 2013, also at the University of New Mexico. Dr. Morrison has substantial teaching experience, having

taught economics for over ten years. Dr. Morrison has also published several papers, presented at conferences, and given numerous lectures in the field of economics.

Dr. Morrison's report includes a complete statement of all opinions to be expressed and the basis and reasons therefore, the information considered in forming the opinions, and any exhibits to be used as a summary of or support for the opinions; a copy of his curriculum vitae, which details Dr. Morrison's qualifications; a listing of all publications Dr. Morrison authored within the preceding ten (10) years; and a listing of other cases Dr. Morrison has testified at trial or by deposition in the preceding four (4) years. In this case, Dr. Morrison is being compensated $1,750 for his study and a rate of $350.00 for any additional testimony.

Plaintiff expects that Dr. Morrison will offer testimony on issues related to lost economic benefits, including salary and retirement benefits, due to her employment discrimination.

More specifically, Dr. Morrison will testify concerning the below:

- The present value of Plaintiff's lost past and future earnings as a result of her termination; and
- The present value of Plaintiff's reduced quality of life associated with her major depressive disorder, which resulted from Dr. Desai's termination.

II. *Reservation of the Right to Rebut and Comment*

Plaintiff reserves the right to supplement and amend this disclosure as discovery is ongoing. Plaintiff reserves the right to have her expert critique, comment upon and rebut the testimony and opinions of the Defendant's experts, if any. Plaintiff further reserves the right to call as an expert witness any person disclosed by the Defendant as an expert witness. Plaintiff reserves the right to elicit from such witness testimony on any of the issues in this case without specifically adopting the testimony and opinions of the Defendant or the Defendant's experts.

Respectfully Submitted,

CHARU DESAI,
By her attorneys,

/s/ Patricia A. Washienko
Patricia A. Washienko, BBO# 641615
pwashienko@fwlawboston.com
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p: 617.723.0008 f: 617.723.0009

Dated: August 1, 2021

CERTIFICATE OF SERVICE

I, Brendan T. Sweeney, hereby certify that a true and accurate copy of the foregoing document was served upon attorneys for the Defendants herein, by electronic mail.

/s/ Brendan T. Sweeney
Brendan T. Sweeney

Dated: August 1, 2021

EXHIBIT E

UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS

CHARU DESAI, Plaintiff, v. UMASS MEMORIAL MEDICAL CENTER, INC.; UMASS MEMORIAL MEDICAL GROUP; UNIVERSITY OF MASSACHUSETTS MEDICAL SCHOOL, UMASS MEMORIAL MARLBOROUGH HOSPITAL, MAX ROSEN, M.D., DARREN BRENNAN, M.D., STEPHEN TOSI, M.D., AND KARIN DILL, M.D., Defendants.	CIVIL ACTION NO.: **4:19-CV-10520-DHH**

PLAINTIFF CHARU DESAI'S EXPERT WITNESS DISCLOSURE

The Plaintiff, Charu Desai, M.D., by and through her attorneys, discloses the witness listed below may be called at trial to offer expert testimony.

I. *Disclosure – Pogos G. Voskanian, M.D.*

Plaintiff expects to call Pogos G. Voskanian, M.D., of Drexel University College of Medicine to offer expert opinion testimony. Dr. Voskanian is a board certified forensic psychiatrist. He earned a Bachelor of Sciences in Engineering in 1974 from Yerevan Polytechnic Institute in Yerevan, Armenia; and in 1986 completed a pre-med program at Harvard University Extension in Cambridge, Massachusetts. He earned his M.D. degree in 1992 at the University of Massachusetts Medical School in Worcester, Massachusetts. He completed his psychiatry residency in 1996 at Tulane University Medical Center in New Orleans, Louisiana; and a further forensic psychiatry fellowship in 1997, also at Tulane University Medical Center.

Dr. Voskanian has worked in private practice as psychiatrist for over 20 years since his fellowship. In addition, Dr. Voskanian has conducted forensic psychiatric evaluations, and formulated over 1,000 expert opinions in State and Federal Courts, for Governmental Agencies including the US Department of State, and for insurance companies. Dr. Voskanian is academically affiliated with Drexel University College of Medicine (MCP Hahnemann University) where he is an Associate Clinical Professor of Psychiatry and the Director of the Psychiatry and Law Program. Included among his many professional qualifications are Diplomate of American Board of Psychiatry and Neurology in the specialty of Psychiatry; Diplomate of American Board of Psychiatry and Neurology in the sub-specialty of Forensic Psychiatry; Diplomate of National Board of Medical Examiners; he is licensed to practice medicine in Pennsylvania, New Jersey, California, Virginia, and Louisiana; and he is a member of the American Medical Association, the American Psychiatric Association, the American Academy of Psychiatry and Law, the Pennsylvania Psychiatric Association, the Philadelphia Psychiatric Society, the Armenian Medical Association of Philadelphia, and the American Academy of Forensic Sciences.

Dr. Voskanian's report includes a complete statement of all opinions to be expressed and the basis and reasons therefore, the information considered in forming the opinions, and any exhibits to be used as a summary of or support for the opinions; a copy of his curriculum vitae, which details Dr. Voskanian's qualifications; a listing of all publications Dr. Voskanian authored within the preceding ten (10) years; and a listing of other cases Dr. Voskanian has testified at trial or by deposition in the preceding four (4) years. In this case, Dr. Voskanian is being compensated at a rate of $360.00 per hour for his study and testimony.

Plaintiff expects that Dr. Voskanian will offer testimony regarding his assessment of the emotional distress that Dr. Desai suffered and is likely to suffer moving forward as a result of her termination from her employment at the UMass Memorial Medical Center after about 30 years.

II. *Reservation of the Right to Rebut and Comment*

Plaintiff reserves the right to supplement and amend this disclosure as discovery is ongoing. Plaintiff reserves the right to have her expert critique, comment upon and rebut the testimony and opinions of the Defendant's experts, if any. Plaintiff further reserves the right to call as an expert witness any person disclosed by the Defendant as an expert witness. Plaintiff reserves the right to elicit from such witness testimony on any of the issues in this case without specifically adopting the testimony and opinions of the Defendant or the Defendant's experts.

Respectfully Submitted,

CHARU DESAI,
By her attorneys,

/s/ Patricia A. Washienko
Patricia A. Washienko, BBO# 641615
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Dated: August 1, 2021

CERTIFICATE OF SERVICE

I, Brendan T. Sweeney, hereby certify that a true and accurate copy of the foregoing document was served upon attorneys for the Defendants herein, by electronic mail.

/s/ Brendan T. Sweeney
Brendan T. Sweeney

Dated: August 1, 2021

EXHIBIT F

UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS

CHARU DESAI, Plaintiff, v. UMASS MEMORIAL MEDICAL CENTER, INC.; UMASS MEMORIAL MEDICAL GROUP; UNIVERSITY OF MASSACHUSETTS MEDICAL SCHOOL, UMASS MEMORIAL MARLBOROUGH HOSPITAL, MAX ROSEN, M.D., DARREN BRENNAN, M.D., STEPHEN TOSI, M.D., AND KARIN DILL, M.D., Defendants.	CIVIL ACTION NO.: **4:19-CV-10520-DHH**

PLAINTIFF CHARU DESAI'S EXPERT WITNESS DISCLOSURE

The Plaintiff, Charu Desai, M.D., by and through her attorneys, discloses the witness listed below may be called at trial to offer expert testimony.

I. *Disclosure – James F. Gruden, M.D.*

Plaintiff expects to call James F. Gruden, M.D., of Weill Cornell Medicine in New York, New York to offer opinion testimony. Dr. Gruden is a board certified radiologist. He earned a Bachelor of Arts in Economics and Pre-Professional Studies with Highest Honors in 1983 from the University of Notre Dame and his M.D. degree in 1987 from the University of Miami, School of Medicine, where he was class Valedictorian and was inducted to the Alpha Omega Alpha medical honor society. Dr. Gruden completed his internship year in Internal Medicine at Cabrini Medical Center in New York, New York. He completed his residency training in Diagnostic Radiology (1988-1992) at the New York Hospital-Cornell Medical Center. He

further completed a one-year Fellowship in Thoracic Imaging at the University of California-San Francisco.

Dr. Gruden was thereafter appointed as Assistant Professor of Radiology in Residence at the University of California-San Francisco. From 1995 through 2000, Dr. Gruden served as Assistant Professor of Radiology at NYU School of Medicine. In early 2000, he was appointed Associate Professor of Radiology and Internal Medicine at Emory University School of Medicine in Atlanta, Georgia. Dr. Gruden served as the Division Director of Cardiothoracic Imaging at Emory University Hospital and Clinic and founded Emory's Biomedical Imaging and CT Post-Processing Lab. From 2005 through 2015, Dr. Gruden was at the Mayo Clinic Arizona in Phoenix-Scottsdale, Arizona, where he served as the Director of Cardiothoracic Imaging. In January 2015, Dr. Gruden was appointed as the Chief of the Division of Body Imaging in the Department of Radiology at Weill Cornell Medical College and at the New York-Presbyterian Hospital-Weill Cornell Campus. He further serves as a Full Professor of Radiology at Weill Cornell Medical College and Attending Radiologist at the New York-Presbyterian Hospital - Weill Cornell Campus.

Dr. Gruden's report includes a complete statement of all opinions to be expressed and the basis and reasons therefore, the information considered in forming the opinions, and any exhibits to be used as a summary of or support for the opinions; a copy of his curriculum vitae, which details Dr. Gruden's qualifications; a listing of all publications Dr. Gruden authored within the preceding ten (10) years; and a listing of other cases Dr. Gruden has testified at trial or by deposition in the preceding four (4) years. In this case, Dr. Gruden is being compensated at a rate of $500.00 per hour for his study and testimony.

Plaintiff expects that Dr. Gruden will offer testimony on issues related to Defendants' review of Plaintiff's CT scans, which it cites as justification for Plaintiff's termination.

More specifically, Dr. Gruden will testify concerning the below:

- His interpretation of the CT scan images and corresponding reports, which were listed in Dr. Litmanovich's findings as containing misreads by Dr. Desai.
- His interpretation of the CT scan images and corresponding reports, which were listed in Dr. Litmanovich's findings as having been read by radiologists other than Dr. Desai for Marlborough Hospital.
- Based on his experience as a radiologist at a major hospital and the apparent methodology of the review, whether the focused peer-review was a fair peer review process.

II. *Reservation of the Right to Rebut and Comment*

Plaintiff reserves the right to supplement and amend this disclosure as discovery is ongoing. Plaintiff reserves the right to have her expert critique, comment upon and rebut the testimony and opinions of the Defendant's experts, if any. Plaintiff further reserves the right to call as an expert witness any person disclosed by the Defendant as an expert witness. Plaintiff reserves the right to elicit from such witness testimony on any of the issues in this case without specifically adopting the testimony and opinions of the Defendant or the Defendant's experts.

Respectfully Submitted,

CHARU DESAI,
By her attorneys,

/s/ Patricia A. Washienko
Patricia A. Washienko, BBO# 641615
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Dated: August 1, 2021

CERTIFICATE OF SERVICE

I, Brendan T. Sweeney, hereby certify that a true and accurate copy of the foregoing document was served upon attorneys for the Defendants herein, by electronic mail.

/s/ Brendan T. Sweeney
Brendan T. Sweeney

Dated: August 1, 2021

EXHIBIT G

In the Matter of:

Charu Desai vs

UMASS Memorial Medical Center, Inc., et al.

James F. Gruden, M.D.

August 31, 2021

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counsel about the nature of the engagement, is that right?

A. Oh, yes. We've spoken many times.

Q. Okay. And the first conversation that you had, how was that -- how was the project presented to you? What were you asked about?

A. Basically, if I could read some CT scans, you know, randomly and see if I agreed with the interpretations, essentially.

And I was told that there was a particular radiologist that was -- it was felt that their interpretations were suboptimal and that some of the cases would be read by that person and some of the cases would be read by other people.

And I was to go through them blinded and just look at the reports and come up with a list of cases that I felt where the reports were probably not -- if I felt any of the reports were either not accurate or, worse, negligent.

Q. Okay. And I imagine you were told that the attorneys who you spoke with represented Dr. Charu Desai, is that right?

A. I was told that at some point in time, yes.

MR. WAKEFIELD: Okay. And just to help us kind of walk through the timeline, I'm going to show you another document.

(Exhibit 5; so marked.)

Q. That has been marked as Exhibit 5. Did this come up for you?

(Reviewing document.)

A. Yes, I see it.

Q. And this appears to be an e-mail from Plaintiff's counsel to you dated July 13, 2020, about this engagement, is that right?

A. Yes. It looks like what we said. I was contacted -- they got me through Expert Institute, and I was asked to review 50 chest CTs.

Q. Okay. Do you know if at the time you received this e-mail you had already reviewed any chest CTs or documents?

A. I must not have because it says we have now received those images [as read].

Q. Okay. And so you think before this e-mail, you had a conversation about, you know, the -- the scope of the engagement, but you hadn't been provided any documents or hadn't done any review, is that right?

A. I assume so. I don't recall, but from the content of this e-mail, it looks like I didn't have access to the images prior to this.

Q. Okay. And this e-mail that you were provided with a link to access the 50 chest CT images, is that right?

A. Looks like it, yes.

Q. And then also an attachment to this e-mail were copies of the reports for each study. Is that your understanding?

A. I don't know if it's attached to this e-mail. I don't I think the reports were ever attached to an e-mail. I think were in the same system as the -- as the images were.

I can't remember exactly, but to my recollection, I was never given anything like that via e-mail. It was always on a system that required me to log in with a password.

Q. Okay. And if you look at -- on the top of this e-mail it says "Attachments:" and there's a document listed, "UMM553-689.pdf." Do you see that?

A. Yes. It's possible those are the reports. I don't -- I don't recall, but I don't -- I don't really remember where the reports were versus the

images.

Q. Okay. And it says in the third paragraph, "The corresponding reports to the studies" et cetera, "are attached to this e-mail." Do you see that?

(Reviewing document.)

A. It says "The studies are labeled" -- oh, the reports are attached. Okay. So the reports were attached to the e-mail.

Q. So prior to receiving this e-mail, you don't remember doing any review or any work on the case other than speaking with counsel, is that right?

A. Well, the date of this is after the invoice before, so I must have done something before this because the invoice was May, I believe, 2020 for $2,500, so five hours I must have spent reviewing something or talking to them about something, but I don't recall.

Q. Okay. But you certainly didn't review any images or reports prior to this, correct?

A. I don't know how I could have because -- because it looks like they weren't available.

Q. Right. And then it says in the fourth paragraph "As discussed in May, could you please review the studies and reports for any major or minor misreads. We're particularly interested in the studies labeled" and then there's a series of studies identified. Do you see that?
A. Yes.
Q. Is that what you were asked to do to, "review the studies and reports for any major or minor misreads"?
A. Yes.
Q. And did you do that?
A. I did that multiple times, actually.
Q. Okay. After receiving this e-mail -- after receiving this e-mail, what did you -- what was the next step you took?
A. I tried to -- I'm sure I tried to log into the system. I believe I had trouble at the beginning with a password or something, but we got it to work eventually and then I did what I was asked to do.
I reviewed the 50 cases, and I reviewed each CT first and then I looked at the report after the CT. I didn't look at the report first. I

didn't want to bias myself, so I looked at each scan myself and -- to decide what I would have said and then I looked at what they said, and I logged any kind of disagreements.

And I believe I had a list also of -- and, again, I'm not sure if it was attached to an e-mail or where it was, but I had a list of what their expert or their internal person said about these cases in terms of what mistakes were made or what this person felt were significant errors.

So I had that information as well at some point, although I can't recall when that was provided to me, if it was after this initial review or at the same time.

As I said, I've been through these cases multiple times, so I can't recall the sequence of exactly what I did each time, but the first time I know I looked just at the CT first for all 50 cases and then I looked at the report and I logged cases where I felt like there was a -- a problem or a disagreement.

And at some point either initially or the second time through I also had access to what the over-reader, the internal expert had to say about

the errors made in these cases.
Q. Okay. So first -- at one point you reviewed each individual CT image and then the report, and you said you logged problems or disagreements, is that right?
A. I looked at each CT and I looked at the report and I wrote a account of the cases where I felt there was something wrong.
Q. And where did you write that account?
A. Just on paper in my office and I at some point put it in writing for the attorneys.
Q. Do you still have that paper in writing where you logged your opinions and problems or --
A. I probably --
COURT REPORTER: I'm sorry. I didn't get the question.
Q. Do you have the papers where you logged the problems or disagreement?
MS. WASHIENKO: Objection.
A. No, I don't have those anymore.
Q. What happened to them?
MS. WASHIENKO: Objection.
A. I destroyed them, but the written reports I'm sure are available.

Q. So the logs that you kept on your review of the CT, all of the information and the notes, your impressions that you took, you memorialized and provided to your attorneys?

MS. WASHIENKO: Objection.

A. Yes.

Q. And so after receipt of this e-mail July 13th, 2020, you did what you just described and provided that information on your review to Dr. Desai's counsel, is that right?

MS. WASHIENKO: Objection.

A. Yes.

THE WITNESS: Sorry. Patricia, are you saying something?

MR. SWEENEY: I'm just objecting for the record, Dr. Gruden.

THE WITNESS: Okay.

Q. But your answer was "Yes," Dr. Gruden?

A. Yes.

Q. And it says, again, in this -- the fourth paragraph of this e-mail, "We're particularly interested in the studies labeled as" and then it lists some studies. In your review, you reviewed all 50, is that right?

had read because when I read these cases myself and did my written reports, I -- I had no idea which cases were read by their client and which cases were read by other people. I didn't have that information.

Q. Okay. So before you had that information, you reviewed all 50 cases, logged your impressions of any problems or disagreements and provided that to Dr. Desai's counsel, right?

A. Yes, sir.

(Pause.)

(Exhibit 6; so marked.)

Q. And I'm going to share with you another exhibit, Exhibit 6. Did this come up for you?

(Reviewing document.)

A. It did.

Q. All right. This appears to be an e-mail from Dr. Desai's counsel to you dated July 28, 2020. Does that look right?

A. Yes.

Q. And this is a couple weeks after the previous e-mail. And it starts off, "As we discussed, the spreadsheet listing which reads the University's reviewer identified as misreads is

attached." Do you see that?
A. I do.
Q. And so is this the document you referenced earlier that identifies which studies were done by which radiologist?
A. Yes. It looks like that, yes.
Q. And then the Attachment, UMM 695-696, this was that document, is that right?
A. I would guess that's what it looks like. It's the University's reviewer statement of the cases that they felt were misread.
Q. Okay. And then it -- so it starts off "As we discussed." Did you have a discussion about the --
A. We had a discussion about --
Q. Just wait for me to finish my question --
A. Oh, I'm sorry.
Q. -- even though you know what I'm asking. You had a discussion prior to receiving this e-mail, is that right?
A. I would -- yes, I believe we had a discussion. We may have had multiple discussions. I can't recall. I think knowing how I do things, I probably called them about my findings before I sent

the written document to them, so we would have had a conversation then and we probably had a conversation afterwards as well.

The nature of the case was that, you know, information, you know, it went in a stepwise fashion, so I don't recall the number of conversations or their dates.

But I do know that I -- the first time I reviewed the cases I was not aware of who read which case and I wasn't necessarily aware of their expert's opinions on them. That might have happened afterwards.

Q. Okay. And then so you were provided with this spreadsheet where the reviewer provided opinions on certain reads, is that right?

A. Yes. And it looks like this is also when I was notified as to which cases were read by their client and which were read by other people.

Q. Okay.

A. Previous to this, I was not aware of who had read what.

Q. And so what did you do in response to this e-mail?

A. I'm sure I went through the cases again

A. No, sir.
(Pause.)
Q. At this point, have you completed all your work on this matter as far as your review and giving opinions?
A. I hope so.
Q. Is there anything else that presently as you sit here today you plan to do in this matter?
MS. WASHIENKO: Objection.
A. No.
(Pause.)
Q. So you mentioned that the -- one of the components of your review was reviewing a spreadsheet where a prior review was done of these same 50 CTs, is that right?
A. Yes.
Q. And do you know -- what is your understanding of what was done as part of that review by UMass Memorial?
A. My understanding of that now is that there was an internal radiologist who did that review at UMass. My understanding before that recently was that I did not know who the outside person was, if it was an outside person or an inside person. I

just assumed that there was someone who had found these reports to be suboptimal that led to the termination of their client, but I didn't know who it was. Subsequently, now I know it was somebody internal. That's about all I know.

Q. How do you know it was someone internal?

MS. WASHIENKO: Objection.

A. I think I asked and I was -- I was told it was an internal person because I couldn't imagine that somebody from the outside would have found any significant errors made by their client.

I was really kind of stunned that anyone would find these errors, and I was curious if they actually had a chest person look at these cases to find these errors because I was really surprised that there was anyone who found any kind of errors.

And I now know it was somebody internal, but I don't know the -- I don't know how they did it or what the thought process was. I just know it was somebody at UMass.

Q. And so there were 50 CTs total as part of the review, right?

A. There were 50 total, yes.

Q. And do you have an understanding of how

A. I think it's Diana something. Begins with an L.
Q. Litmanovich?
A. Yes, I think so.
Q. Okay. Do you know what department she works in?
A. I'm assuming she works in the radiology department.
Q. At UMass Memorial?
A. Or Marlborough. I'm not sure which affiliate.
Q. Okay. Had you ever heard of -- heard that name before? Do you know her?
A. I think I've heard the name before, but I don't know her.
Q. Do you know how the studies were selected for the review?
A. I do not.
Q. Do you know who selected them?
A. No, I don't.
Q. Do you know if the reviewer reviewed them blind or whether she knew which radiologist read which study?
A. No, I don't know.

Q. Do you know why the review was conducted?
A. No, I don't.
Q. Do you know the method that was used in conducting the review?
A. No.
Q. Do you know the purpose that the review was conducted?
A. No.
Q. And do you know what happened as a result of the review, what it was used for?
A. I know that it was used to terminate the client. My attorney's client.
Q. Do you know what Dr. Desai's legal claims are in this lawsuit?
A. I do know just vaguely. I -- I suspect it's partly wrongful termination and partly a thought of discrimination in some -- some way for whatever reason; whether it's sex, age, ethnicity, I really don't know, but I suspect that that's her concern.
(Exhibit 11; so marked.)
Q. And I've just shared with you hopefully Exhibit 11. Did that come through?
(Reviewing document.)

A. Yeah.
Q. Do you recognize -- and this is a 137-page document, but looking at the beginning, do you recognize this document?
A. Yes, I do. These are the reports from the CTs that were provided to me.
Q. Okay. So these are the reports from the 50 CTs that you reviewed along with the images that you were provided, correct?
A. Yes.
Q. And am I correct that these reports are deidentified, meaning it doesn't list the radiologist who performed the review?
A. Yes, that's correct.
(Exhibit 12; so marked.)
Q. And I've just distributed Exhibit 12, and this one is a little small. There is a Zoom feature which you can feel free to use if helpful. Do you recognize this document?
(Reviewing document.)
A. Yes.
Q. And what is this?
A. This is the comments from the expert reviewer.

substantive -- that's all the substantive information on these CTs that you were provided by Dr. Desai's counsel?

A. Images, reports, and -- and this document, yes.

Q. Did anyone at any point give you any other information about the CTs or the reads at all or do these documents contain all the information about the -- the CTs and the studies and the reports, rather?

A. This is -- this is all I had.

Q. Okay. So no one verbally provided you any explanation on any particular report or study?

A. No.

Q. Okay. And so without knowing now that this column is here, the "CD" and "O," without that column, is there any way -- sorry. Strike that.

If you were -- if you weren't told who performed the CTs, whether it was Charu Desai or other, based on the -- the information that you had, the images, the CT reports and this, could you have determined who the reviewing radiologist was on any of these studies?

MS. WASHIENKO: Objection.

A. No. And as I said, the first time I reviewed them I -- I didn't have this information. This -- this would have been the second time through.

Q. Okay. So if you were never told which ones were read by Dr. Desai, you would not have known based on any of these documents, correct? The images or the -- or this document with that column?

A. Not correct. Actually, the first time I went through there were some really terrible reports, and I assumed those were going to be by Dr. Desai because she was the one being terminated, and it turned out they were not by her, so... I did not know.

Q. And other than the ones performed by Dr. Desai, which you at least eventually knew which ones, you don't know the identity of any other radiologist who performed any of the other reviews, is that right?

A. I do not, and I also don't know if the other radiologists were chest radiologists or what their subspecialty or what their background. I knew nothing about the other readers or how many there were even.

Q. Right. You don't know how many of the other -- the others were -- how many other radiologists were included in "other," right?
A. No, I don't.
Q. So if the UMass Memorial reviewer, as we'll use the phrase, did not have this column with "O" and "CD," she wouldn't have known who the reviewing radiologists were either, correct?
MS. WASHIENKO: Objection.
A. Correct, but I don't know what information she had when she did this review. I don't know anything about how it was done.
Q. And without having -- if the reviewer didn't know who performed which CT, the reviewer couldn't have discriminated against Dr. Desai's reviews, is that right?
A. That's correct. I -- if you don't know who read what case, you can't discriminate against a reader.
Q. Do you know Dr. Desai's race?
A. Do I know her what?
Q. Her race.
A. I do.
Q. What is your understanding?

A. I believe she's from India.
Q. Okay. Do you know her age?
A. I know that she's older, but I don't know her age.
Q. How do you know that?
A. I don't recall. It came up in conversation at some point.
Q. And you know --
A. Probably because I was curious as to what her experience level was, if she was, you know, recently trained or, you know, what -- what her career level was when I started reviewing cases or after -- after the first review through, it came up in conversation at some point.
Q. Were you ever provided a copy of her CV or any other credential information?
A. No.
Q. And you're aware that she's a female, is that right?
A. Yes.
Q. Are you aware of whether she has any disabilities?
A. No, I'm not.
Q. And you can't tell any of that information

from reviewing these reports or studies, right?
A. No, I can't tell.
Q. If you can go back to...
(Pause.)
Q. If you can go back to Exhibit 10 for me, --
A. Okay.
Q. -- which is your expert report here. It says in the first sentence that you "reviewed 50 CT examinations." The second line, "that were interpreted by Dr. Desai and by other radiologists in the same Department at Marlborough Hospital." Do you see that?
A. Yes, I do.
Q. And when you're referring to other radiologists, you're referring to -- Dr. Desai and other radiologists, you're referring to all 50 studies, is that right?
A. Yes.
Q. Is it your understanding that Dr. Desai worked at Marlborough Hospital?
A. It's my understanding at the time I prepared this document. I didn't -- I don't know believe I knew that beforehand. I just knew she was

at UMass. I don't know that I knew that she was at Marlborough Hospital in particular.

Q. Well, what leads you to believe she's at Marlborough Hospital in particular?

A. It came up in conversation with counsel.

Q. And the 50 images you reviewed, do you know what hospital the images originated from?

A. I do not.

Q. Did you ever discuss with Dr. Desai's counsel what hospitals they originated from?

A. No. I assume they were Marlborough Hospital, but I don't know.

Q. And if you turn back to Exhibit 11, from looking at the reports, is there any way that you're aware of to determine what facility the images originated from?

A. You can look at "Location." Most of these say something ED, emergency department, but it doesn't say the institution.

Q. So you can't tell what institution from reading these reports?

A. No. I really wouldn't have tried because it really is not relevant for my purposes.

Q. All right. If you could jump back to

felt were misinterpreted.
Q. Okay. And then jumping ahead, so this is a series of -- of studies mentioned and then jumping ahead to Page 5, if you turn there for me.
A. Mh-hmm.
Q. At the bottom it says, "Specific analysis of cases interpreted by radiologists other than Dr. Desai at Marlborough Hospital follows." Do you see that?
A. Correct. Yes.
Q. So am I correct that this report outlines specific commentary you have on Dr. Desai's reads as well as cases interpreted by other radiologists?
A. Yes.
Q. And so out of the 50 CT studies, I count 16 studies that are addressed in this report, is that right?
A. I agree with that if that's what you counted. I didn't count them.
Q. Do you know why there's only 16 addressed out of the 50 in here?
A. These are the cases, as I think I outlined, where the review -- the Dr. Desai cases are where the -- are cases where the over-reader

claimed they were misreads and then the remaining cases were selected by me from the cases read by other people where I felt like the reports were not well done.

And I don't believe -- at the time I did those cases, I don't think I looked at what the internal UMass reviewer said about these cases read by the other radiologists.

I don't think that was included in my -- my written report. I was only interested in the cases read by Dr. Desai in terms of what the over-reader had to say about those.

Q. And so if this report here, this Exhibit 10, is a summary of all of your opinions you intend to offer in the case, is it fair to say that you don't intend to offer opinions about any studies that are not listed in here?

MS. WASHIENKO: Objection.

A. I -- I don't intend to, but if something comes up I'm happy to, and I -- I did address all of the reports in the initial review and the initial documents, but there may have been other things in that initial document that might be important. But these were targeted -- I specifically focused on

document, QA chest 8 rule out PE 2 2/4/17 [as read], I mentioned the Impression could have added the left lower lobe consolidation, but this is not a major error.

The important findings were made in -- in the body of the report, so I personally would have made sure to mention that in the Impression, but she mentioned it in the findings. I think that's the only thing I remember about her reports that I had an issue with.

Q. Okay. So the reports that are not identified in this document that were conducted by Dr. Desai, you didn't find any errors or you didn't have any disagreements with her reads on those?

A. No.

Q. Is it fair to say that your opinions on those reads would have been reflected in that initial document you did when you reviewed all 50 and logged any disagreements?

MS. WASHIENKO: Objection.

A. Yes.

Q. And, again, you touched on this, but there's only six studies in this report that are identified that were performed by other radiologists

other than Dr. Desai. How did you select those to include in this report?

A. Those were six reports where I felt there was a significant error as -- as I previously defined. These were substantive, significant errors.

The rest that I may have disagreed with or I may have thought the report wasn't great were not of this level of magnitude, and I felt like this number out of -- I don't know how many cases the other radiologists read, but if we assume they read half of them, six major errors out of 25 is not very good and I felt like that was enough.

Q. So for the studies that are not included in here that were performed by other radiologists, you did not identify significant errors in them?

A. I wouldn't say that. I would say that if there are significant errors, I didn't find them as bad as these six. I thought these six were pretty bad and they were enough.

Q. Were you provided guidance from Dr. Desai's counsel on how to choose those six?

A. No. I -- I was asked to review some of the cases that I thought that the other radiologists

Q. Okay. So the reports that were performed by other radiologists that are not included in here you would not consider as having significant errors?
A. Correct. By my definition, yes.
MR. WAKEFIELD: Okay. I think this is a good time to -- I'm going to switch gears. Can we take like a ten-minute break?
THE WITNESS: Yes, thank you.
(A break was taken from 10:16 a.m. to 10:30 a.m.)
Q. So, Dr. Gruden, I'm going to ask you some questions about some of your opinions as compared to the CT reports, so we might have to do a fair amount of toggling back between documents, but I'm going to try and make it as easy as I can.
But first if you turn to Page 2 of your expert report, which is Exhibit 10, do you have that in front of you?
A. Yes.
Q. So I'm going to ask you about some of these studies. And so at the time -- for each study listed, it's identified by its number, QACHO8, 9, et cetera. For each one of these narratives that you provided, at the time you wrote this narrative,

did you know whether the study was performed by Dr. Desai or someone else?

A. At the time of this narrative, yes, I did.

Q. Okay. So all of the narratives written for each study in this report, whether a Dr. Desai read or a read that was not done by Dr. Desai, at the time you wrote this, you knew who did what?

A. Yes.

Q. Okay. And so if you take a look at No. 8, and then so what I'm going to ask you to do is refer back to Exhibit 11 which are the -- the reports, themselves, and if you can turn to QACH 8, which I'm trying to find which page it is for you.

A. I've got it.

Q. Page 13. Are you on that Page 13?

A. Yes.

Q. So what does "PE" mean?

A. Pulmonary embolism.

Q. And so my understanding is the UMass Memorial reviewer's criticism of this report is that the condition is referred to as consolidations without specifying between pneumonia or rounded atelectasis. Is that --

A. I have to toggle back. Is that what I

So I'm not sure in this instance why the reviewer felt so strongly that pulmonary edema should not have been mentioned because I can't myself tell that it's not pulmonary, and I don't know how she feels so certain about that.

And, again, this is one of those things where I disagree, she disagrees. You know, it's -- this happens, but this is not an error that falls out of the bell curve of what we see every day between radiologist reads that are slightly different from each others.

Q. And so this one judgment is open for interpretation. You would agree?

A. I think so. That's -- that's a good way to put it.

Q. And just when you first reviewed this image and the report, you would have taken notes on what you observed from the image?

A. I would have -- I would have jotted down the findings I would have reported.

Q. And, again, --

A. Like my impression. In my Impression, I would have kind of jotted down my impression on a case.

Q. And those -- that information you would have provided to counsel and then destroyed it, is that right?

MR. SWEENEY: Objection.

A. No. I provided it to counsel in the -- in the form of that written report of the first 50 cases.

There was nothing that I wrote down or jotted down that I didn't put on that -- that review that I wrote -- that I wrote. That was -- that was actually more extensive than my notes were.

Q. Okay. That's what I'm just making sure I'm understanding where this information now might be. Do you remember whether you recorded whether you observed pulmonary edema when you reviewed this image?

A. My recollection, I agreed with her report. I saw the findings that she saw and I would have described them in a very similar way.

Q. All right. Turning to No. 10, which is Page 19 (sic) of Exhibit 10. And, again, feel free to refer to your -- your report and then the reviewer's report as you see fit, and I'll take my time to allow you to do that.

Q. According to the report.
A. Yeah, he says the largest is about 5 millimeters.
Q. All right. So under the Fleischner guidelines for between 4 and 6 millimeters, which is where 5 millimeters would fall, for a high-risk patient, it describes the standard follow-up timeline, right?
A. Yes. As I said, I don't have a problem with this really being in the -- in the bell curve of their most egregious errors. This isn't a huge mistake.
I'm just saying that these are things I would have done differently in this case and in the other one. I don't find these to be things I would report as major discrepancies.
Q. Is this an error at all?
A. Not really. It's -- it's more of a -- again, because it's done specifically for nodules, it's just a phrasing that I would have used differently to make it clear to the patient and the referring doctor that these are nothing. That's all.
Q. Okay. So but No. 23, there's really

nothing wrong with this report, right?
A. No, I don't -- I don't think so. In the grand scheme of things, no.
Q. And so -- and then the previous one, No. 22, is this a significant error under your definition that you provided at the outset?
A. I forgot what 22 was.
(Reviewing document.)
A. In terms of affecting patient management or outcome, probably no, but in terms of clarity of a report, as I said, it's not a very -- it's a sloppy report.
Q. Is it a significant error?
A. There's not a significant error in terms of affecting patient outcome or management, no, but the report, itself, is not very -- it's not very good.
Q. I -- you know, I understand. I understand what your critique is. I'm just trying to determine -- again, earlier we were talking about line drawing. Is this No. 22 properly tagged as a significant error in your mind?
A. No. No, not -- not in that -- in that category. I don't think very many of these cases

are. None of Dr. Desai's were and I think very -- not very many of these other people's were either, but the only significant errors of the 50 occurred in the group read by other people by the way that we're defining it. These cases are -- are not in that group.

Q. And so if you skip to No. 24, and if you refer -- I'm going to ask you to -- I'll take note of this page and I'll give it to you when you come back. If you could look at Exhibit 12, the reviewer's report for me. On this one, 24.

(Reviewing document.)

A. Okay. 24.

Q. And if you're looking at 12, my -- Exhibit 12, the reviewer's report, my question is, isn't it true that the reviewer identified a disagreement with this, No. 24?

A. Yes. Is that what I identified as well?

Q. No. You identified it -- it appears in the report, but I'm going to ask you some -- some questions about it. If you turn to -- back to Exhibit 11, Page 63.

(Pause.)

A. That's why it wasn't working. Okay.

painful, ongoing audit. We're very meticulous about our reports and making sure that they're -- they don't have these types of errors in them, so this is an issue that I brought up in my overall assessment of these reports that they really need some sort of mechanism to do QA on their reporting because there are a lot of typos and a lot of very unacceptable typographical mistakes in a number of these reports, and they really need to address that because these are legal documents and you can't -- you can't have that.

Q. And understanding that full well, is -- was a significant error made in this report, No. 25?

A. By the definition that we're using, no, but if you want to talk about, you know, significant reporting errors in terms of typographical, yes, this report is -- is significantly not acceptable.

It's fortunate that patient care wasn't affected, but the report itself is -- is well outside the standard of care.

Q. And then going to No. 30.

A. No. 30.

Q. Okay.

A. Now I'm trying to find it here.

Q. Dr. Gruden, going back to your expert report, Exhibit 10, and I'll ask you a couple more questions about it. So as we discussed, your opinions that you provide in this report on each individual study were prepared after you knew which reads were done by Dr. Desai and which ones were not, correct?

A. Correct.

Q. And so is there any -- does the initial blinded review you did have any relevance on the conclusions that you came to in -- in this study or is that a separate thing that was done before you prepared this -- these conclusions?

A. That's a separate -- that's a separate thing that was done at a different time point.

Q. Okay. And so all of -- to your knowledge, all of the opinions that you intend to offer are included in this report and based on these conclusions you come to, correct?

A. Yes.

Q. If you turn to Page 7, about two-thirds of the way to the bottom it says "Although not read at Marlborough Hospital, I also wanted to make a specific notation with regard to QACH 20." How do

the last -- or the second-to-last page, Section IV entitled "Expert Opinions." We -- we talked about your opinions on Dr. Desai's reads, correct?

A. Yes.

Q. And we talked about your opinions on the reads by other radiologists, correct?

A. Correct.

Q. And then so you also provide in the last paragraph an opinion that "based on my experience as a radiologist at a major hospital and the apparent methodology of the instant review (i.e., that all of the cases were submitted in a small window in early 2017), I have formed an opinion to a reasonable degree of certainty, that the method of peer review used in this case does not conform to any appropriate or well-known guidelines for a fair peer review process," is that right?

A. Yes.

Q. But you don't know anything about how the underlying review was conducted, right?

A. I only know these 50 cases. There may or may not have been more cases that were analyzed. I don't know. I only know these 50.

Q. But you don't know the purpose of the

review, right?
A. I don't.
Q. You don't know what led to the decision to conduct the review?
A. I do recall a mention in discussion with the attorneys that there were -- I believe there were some complaints about their client.
I don't remember from whom or whether it was from more that one person, but there were some complaints lodged with the department about her reads.
Q. All right. Do you know how many complaints?
A. I don't know.
Q. Do you know what the complaints were about?
A. Just her -- her readings.
Q. Okay. Any -- anymore specifics than that that you're aware of?
A. No.
Q. And you don't know -- or you mentioned before you were told who performed the review, right?
A. Yes. Long after I was done.

Q. You don't know that person's qualifications, right?
A. I -- I believe -- I've heard of her, so I suspect she's a chest radiologist. I think -- I think she's a chest radiologist. I don't know much about her other than that.
Q. And you don't know if the reviewer knew the identity of the reading radiologist for each study at the time the review was conducted, right?
A. I don't know.
Q. Do you know how the images were selected for the review?
A. No, I don't.
Q. And you don't know who selected those images?
A. No.
Q. And you don't know which radiologist or the number of radiologists who performs the reads which were not done by Dr. Desai, right?
A. No, I don't know that information.
Q. You don't know why the time period was selected from which these studies were chosen, right?
A. No.

Q. And you mentioned with respect to the apparent methodology that all the cases were submitted in a small window in early 2017. Why does that make a difference?

A. Well, first of all, it's not -- it's not a sustained pattern of bad reads when you're only looking at one month. I don't know what was happening with this person during that month.

I don't know what her schedule was like, if she was, you know, overworked or what -- what she was expecting to double cover in other service. I don't know anything about what happened in that one-month period to make a conclusion about someone's performance.

And also, as I think I've mentioned before, the window, you know, may have been a period of time when she was covering specific types of cases that were complicated, like the hospital.

She had a lot of complicated cases that I didn't really see reflected in others, so her spectrum of clinical practice during that period of 2017 may have been different than it is -- was in other months. That's -- you know, that's kind of it.

Q. Okay. And but you don't know the details there. You don't know whether she had a specific difference in her duties during that period. You don't know whether it was normal. You don't know anything about the answers to those questions that you just raised, right?

A. No, I don't know, and I also don't know if she was ever previously investigated or if she was given feedback and a chance to improve her performance before or if this was just a one-time -- the only evidence I have that led to this whole thing is these 50 cases over a one-month period.

Q. And with respect to the time frame, the other studies that were done by other radiologists are from the same period, is that right?

A. I believe so. I think all the cases were from the same period.

Q. And you don't know when the review was performed, right? You know when the cases were from, but you don't know when the review was performed?

A. I don't know.

Q. You don't know how long it took to perform the review?

A. No, I don't.
Q. You mentioned that in the -- in your report that it appears to be a hastily performed review. What makes you think it was hastily performed?
A. Because the cases were from a very small window of time. The -- I think it's obvious from what I said in my written opinions that there was nothing here that would warrant a termination.
I don't know anything about any -- anything about these reports. There may be other factors here involved. I'm sure there are and I don't know any of those.
But to target a review this quickly, and I wasn't given any information about any of the other radiologists being subjected to the same peer review and the same type of action and feedback despite the fact there their reports were actually worse, this looked like it was all thrown together in a fairly urgent basis without attention to what really qualifies as an objective peer review that's fair and across the board with everybody in the group and representative of, you know, many different types of cases and over a -- over a longer time period. You

something dramatic and acute that must have happened, but I didn't see that in any of the reports that I got. That doesn't mean it didn't happen, but based on these 50 exams, I don't see anything here that would warrant a targeted, urgent review.

Q. And, again, other radiologists were included in the review as well, right?

A. Yes. I don't know how many.

Q. And so is it fair to say that the peer review process that you're referring to is something different than what this review would be?

A. It seems to me, yes.

Q. Okay. You don't know what UMass Memorial's peer review process is, right?

A. I don't. And I don't know if she's -- as I said, I don't know if she's had prior peer reviews that showed something or not. I -- I only have this 50 cases.

Q. Okay. So is it fair to say that you don't really know what the methodology was for the review done by UMass Memorial?

A. That's correct.

Q. And you mentioned "the method of peer

review used in this case does not conform to any appropriate or well-known guidelines for a fair peer review process." What appropriate or well-known guidelines are you referring to?

A. Well, for one thing, as I said, you typically don't do targeted reviews on -- on one person like this. You don't do them over a one-month window with a really narrow number of -- small number of cases.

And it's supposed to be transparent. It's -- you know, our peer review is pretty transparent, and you give feedback to people when there's issues so they can improve their performance. Everything's documented.

I mean, I don't -- I don't really -- I don't really see a lot of those characteristics present here.

Q. And, again, so does this appear to you to be a review that's outside of the normal peer review process?

A. Yes. This is -- as I said, this appears to be something that had a specific target and a specific purpose, and I don't know whether that purpose was justified or not, but that's just how it

comes across. I could be wrong, but this is all the documentation I have and if this is all there is, this looks like a targeted review that was done for a reason.

Q. Okay. And assuming it was a targeted review done for a reason, is there anything wrong or do you have any knowledge about whether there was anything wrong about it?

A. No. I said I have no idea about Dr. Desai's performance on other cases or if there was a history of problems or if there's anything else that I'm -- I don't know anything about the situation. My opinion is strictly about these 50 cases.

Q. And you say that -- you reference that it does not conform to guidelines for a "fair" review process. Can you tell me what was not fair about this process, if -- if you can?

A. Well, based on my -- what I have. As I said, the other radiologists are not identified in terms of either name or the number of them.

She's identified, you know, by name as to which cases she read. And on the expert's overview, their internal expert obviously had that information

Q. But if the reviewer was not internal at UMass and did not know the identities, then you can't think of any reason that -- which would lead you to believe that she would have discriminated against in this -- in these -- in the reviews?

MR. SWEENEY: Objection.

A. NO. I think the -- the other question I had about this peer review process was that -- we didn't go through some of these cases in detail, but there were a couple or three that really had major issues. One in particular where the report was just gibberish to read. It was completely illegible.

I'm assuming that they gave peer review feedback to these people about proofreading their reports, you know, rather than targeting whether someone mentions secretions in the trachea or not.

I mean, those -- those errors -- you know, I -- I don't know the remediation for that, but those errors happen in more than one report over a long -- over the entire month time frame, as far as I remember. I didn't see any -- any intervention with regard to that.

Q. Is there any other work that you did on this matter that we didn't discuss or did we discuss

information to counsel. We have not received copies of those findings and we believe that if he intends to offer any opinions that are based on any blind review, that those are discoverable and should be produced and we're going to reserve the right to keep the deposition open to reconvene and ask him further questions in the event that that becomes necessary.

THE WITNESS: I'm sorry. Can I just clarify? That's my recollection. It's very possible that I didn't write every single of the 50.

If there was -- as I said before, I think I alluded to this, if the -- if the case was very straightforward and the report was fine and there was nothing, it's very probable that I didn't include those in the -- in the written documents.

MR. WAKEFIELD: Understand.

THE WITNESS: So I -- I'm not saying that I definitely commented on every one of the 50 in -- in writing.

MR. WAKEFIELD: Understood.

THE WITNESS: Okay.

MR. WAKEFIELD: But with that, that's all the questions I have and your -- Mr. Sweeney or